Technical Report:
March 2008 Groundwater Monitoring Program Results and Baseline Ecological Risk Assessment

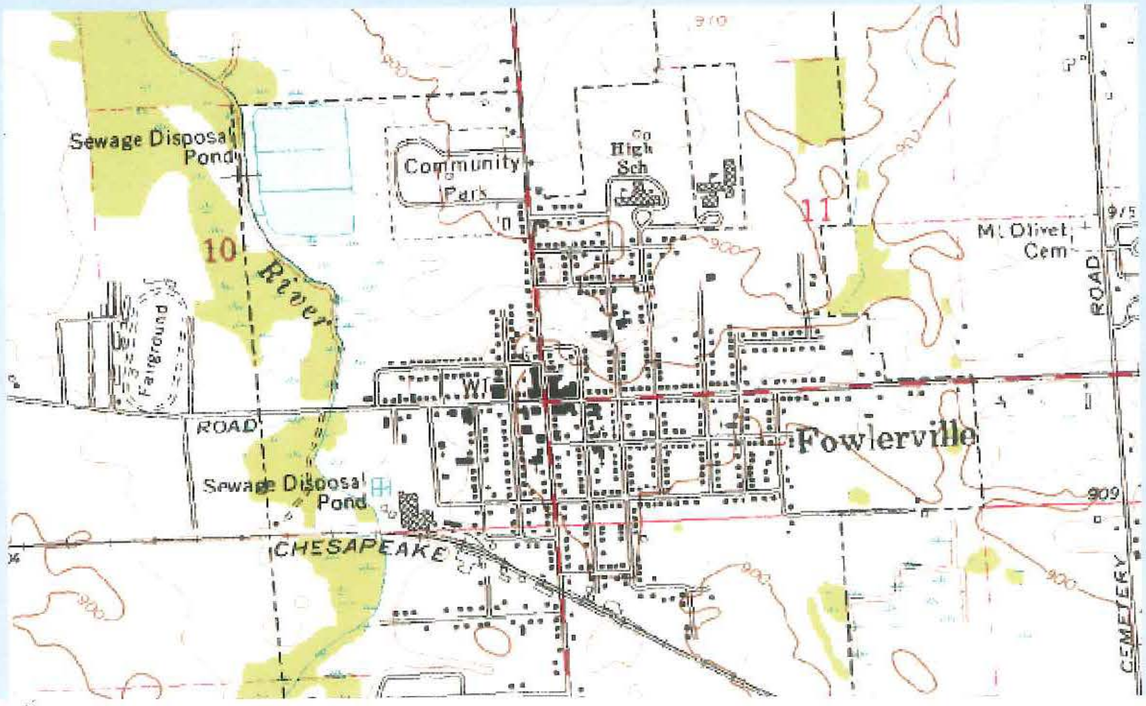
Former JCI Stanley Tools Site

Fowlerville, Michigan

April 2008

Prepared by:

ENTACT.



ENTACT
environmental services

April 7, 2008

Mr. Juan Thomas
U.S. Environmental Protection Agency Region 5
Enforcement & Compliance Assurance Branch - RCRA
77 West Jackson Blvd.
Chicago, IL 60604-3590

Re: March 2008 Groundwater Sampling Results and the Baseline Ecological Risk Assessment Report for the Former Stanley Tool Site, Fowlerville, MI
MID 099 124 299

Dear Mr. Thomas,

Enclosed are three copies of the March 2008 Groundwater Sampling Results and the Baseline Ecological Risk Assessment Report for the Former Stanley Tool Site, Fowlerville, Michigan. The report was prepared for the U.S. Environmental Protection Agency (USEPA) on behalf of Johnson Controls, Inc. in accordance with the December 1, 2006 Final Decision and the approved June 2007 Modified Corrective Measures Implementation Program (CMIP) Work Plan.

Please feel free to contact me at 630.986.2900 if you have any questions on the enclosed document.

Sincerely,

Patricia Thomson

Patricia A. Thomson, P.G.
ENTACT & Associates LLC

Cc: Jesse Padilla, Gonzalez Saggio & Harlan LLP

MID 099 124 299

ENTACT
environmental services

Date: April 3, 2008

To: Juan Thomas, U. S. EPA

From: Patricia Thomson, P.G., ENTACT

Cc: Jesse Padilla, Gonzalez, Saggio & Harlan LLP
Edward (Ned) Witte, Gonzalez, Saggio & Harlan LLP

Re: Evaluation of the 2008 1st Semi-annual Groundwater Sampling Results and Baseline Ecological Risk Assessment (BERA) for the former Johnson Controls Inc. (JCI) Stanley Tool Site, Fowlerville, MI and Proposed Well Relocation/Abandonment Plan

Dear Mr. Thomas:

This technical report presents the results of the 1st Semi-annual 2008 groundwater sampling event conducted between March 4 and March 8, 2008, and the Baseline Ecological Risk Assessment (BERA) for the former JCI Stanley Tool Site in Fowlerville, Michigan (Site) (Figure 1). This report also presents our recommendation for the removal and replacement of certain monitoring wells in the Groundwater Monitoring Program (GWMP), as well as the abandonment of non-GWMP monitoring wells. Our findings and recommendations are as follows.

Introduction

A teleconference was held on February 26, 2008 between the United States Environmental Protection Agency (U.S.EPA), the outside legal counsel for Johnson Controls Inc. (JCI)'s, and ENTACT to discuss proposed plans by the current Property Owner, American Compounding Specialties, Inc. (American Compounding), to begin significant building expansion and flood plain filling activities in late April or early May, 2008. Previous construction activities by American Compounding associated with construction of the initial facility had resulted in damage to two monitoring wells in the approved GWMP (MW-08 and MW-25), and three additional monitoring wells not included in the GWMP which were found to be covered or removed during the July 2007 well survey (MW-06, MW-07, MW-12). The proposed 2008 expansion and filling activities will further impact existing monitoring wells at the Site based on the American Compounding proposed expansion and fill plans presented in Attachment 1. The proposed construction activities will necessitate relocation and replacement of certain monitoring wells currently in the GWMP that have already been damaged or are at risk of being damaged, and proper decommissioning and removal of those monitoring wells not included in the approved GWMP that fall within the proposed expansion or fill footprint.

Pursuant to that discussion, the March 2008 groundwater sampling results along with the completed BERA results are presented in this Technical Report along with the proposed well relocation and abandonment plan for review and comment by the to the U.S.EPA. Following U.S.EPA review and approval, monitoring wells that currently fall within the planned construction footprint will either be relocated and replaced, or properly decommissioned in accordance with state regulations. American Compounding has been advised that no construction or filling activities should be initiated until the U.S.EPA has reviewed and approved the proposed well relocation or abandonment plan for wells that will be affected by the proposed facility expansion. As American Compounding was looking to start the proposed construction activities in late April or early May, JCI agreed to conduct the 2nd round of groundwater sampling earlier than planned in order to submit the results along with the BERA results as early as possible to allow the U.S.EPA time to review and approve this information before construction activities begin.

1ST SEMI-ANNUAL 2008 GROUNDWATER SAMPLING EVENT

The 1st semi-annual 2008 sampling event was conducted between March 4 and March 6, 2008 in accordance with the approved *June 2007 Modified Corrective Measures Implementation Program Work Plan (CMIP Work Plan)* and the *U.S.EPA Final Decision and Response to Comments - Selection of Remedial Alternatives for the Site*, with the omission of two previously-damaged wells (MW-08 and MW-25). Eleven of the 17 remaining wells in the approved groundwater monitoring program (GWMP) were sampled at this time including MW-02, MW-11, MW-14, MW-17, MW-22, MW-24, MW-26, MW-A2, MW-B-1, MW-B2, and MW-J2. The remaining six monitoring wells in the GWMP could not be accessed due to site conditions (heavy snow and high water levels). These include background wells MW-28 and MW-28C, on-Site MW-21, and off-Site wells MW-OS1, MW-OS3 and MW-OS3C. Well locations are presented in Figure 2. As soon as the water levels fall to a point where the field crew can reach these wells, the six remaining wells will be sampled and results submitted to the U.S.EPA as an Addendum to this April 4, 2008 Technical Report. It is believed that the data from the 11 monitoring wells that were sampled will provide sufficient information to allow for reaching a decision on the proposed relocation/abandonment plan.

Prior to sample collection, static water level (SWL) measurements were collected. The SWLs and calculated groundwater elevations were used to determine groundwater flow direction in the shallow saturated horizon, which correlated with previous findings that shallow flow is toward the Red Cedar River, with a westerly flow direction across the Site on the east side of the river, and a northeasterly direction of flow from the properties west of the river. The groundwater flow potentiometric map, presented in Figure 3, shows that the groundwater flow direction remains consistent with previous sampling events.

The wells were sampled by CTI & Associates, of Brighton, Michigan, as part of the GWMP for the listed parameters shown in the following table:

Well Location	Horizon	Purpose	Frequency	Parameters
MW-02	Shallow	Performance/MNA	Semi-annual	VOCs
MW-08	Shallow	GSI Compliance	Semi-annual	DAMAGED – not sampled

Well Location	Horizon	Purpose	Frequency	Parameters
MW-11	Shallow	On-Site Plume boundary	Semi-annual	VOCs, total CN-, 10 MI metals [2]
MW-14	Shallow	GSI Compliance/Off-Site Plume boundary	Semi-annual	VOCs, total CN-
MW-17	Shallow	GSI Compliance/ Performance/MNA	Semi-annual	VOCs, total CN-, 10 MI metals, Ni, Cr+6, MNA parameters [1]
MW-21	Shallow	GSI Compliance	Semi-annual	To be sampled in April 2008: VOCs, CN-, 10 MI metals, Ni, Cr+6,
MW-22	Shallow	GSI Compliance	Semi-annual	VOCs, total CN-, 10 MI metals, Ni, Cr+6,
MW-24	Shallow	GSI Compliance	Semi-annual	VOCs, total and available CN-, 10 MI metals, Ni, Cr+6,
MW-25	Shallow	Performance/MNA	Semi-annual	DAMAGED – not sampled
MW-26	Shallow	GSI Compliance	Semi-annual	VOCs, total CN-, 10 MI metals, Ni, Cr+6
MW-28	Shallow	Background GW Quality	Semi-annual	To be sampled in April 2008: VOCs, 10 MI Metals, Ni, CN-
MW-28C	Deep	Background GW Quality	Semi-annual	To be sampled in April 2008: 10 MI Metals
MW-A2	Deep	GSI Compliance	Semi-annual	VOCs, total CN-, 10 MI metals, Ni, Cr+6,
MW-B1	Shallow	GSI Compliance	Semi-annual	VOCs, total CN-, 10 MI metals, Ni, Cr+6, MNA parameters [1]
MW-B2	Deep	Vertical Plume Monitoring	Semi-annual	VOCs, total CN-, 10 MI metals
MW-J2	Deep	Vertical Plume Monitoring	Semi-annual	VOCs, total and available CN-, 10 MI metals
MW-OS1C	Deep	Off-site Vertical Plume Monitoring	Semi-annual	To be sampled in April 2008: VOCs, CN-, 10 MI metals
MW-OS3	Shallow	Off-site plume monitoring	Semi-annual	To be sampled in April 2008: VOCs, CN-, 10 MI metals
MW-OS3C	Deep	Off-site plume monitoring	Semi-annual	To be sampled in April 2008: VOCs, CN-, 10 MI metals

Green shading indicates the well found damaged during the 2007 well survey
Blue shading indicates wells which could not be accessed due to heavy snow and high water conditions – these wells are slated for sampling as soon as conditions permit – estimate early April 2008
[1]: MNA: monitored natural attenuation parameters include sulfates/sulfides, nitrates/nitrites, ferrous/ferric iron, alkalinity, hardness, manganese, chemical oxygen demand, ethane/ethane
[2]: The 10 MI metals include: arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, copper, and zinc.

The groundwater samples were collected using low-flow minimal drawdown sampling methodology in accordance with the U.S.EPA *Ground Water Issue Paper – Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedu*res, *EPA/540/S-95/504 (April 1996).* The samples were submitted to Trimatrix Laboratories of Grand Rapids, Michigan for analysis in accordance with the approved 2003 Quality Assurance Project Plan (QAPP) prepared by Earth Tech/Weston (ETW) and the Work Plan. The complete analytical results are provided in Attachment 2.

A summary of the analytical results in comparison to the MDEQ Generic Groundwater-Surface Water Interface (GSI) cleanup criteria, Worst Case Maximum Site Concentration values, and the MDEQ Mixing Zone Final Acute Values (FAVs) and in comparison to the July 2007 results are summarized in Table 1.

Metals

Total and dissolved chromium were detected in MW-B2 at levels of 5.7 µg/L and 1.9 µg/L respectively, below the Michigan Department of Environmental Quality (MDEQ) generic groundwater-surface water interface (GSI) criterion of 230 µg/L. As shown in Table 1, the previous July 2007 results showed no detectable levels of total or dissolved chromium at this location. No other dissolved metal exceedences of the calculated GSI criteria, MDEQ-determined Final Acute Values (FAVs) or Reported Worst Case Maximum Site Concentrations were found in any of the 11 wells that were sampled.

Total copper was detected in MW-11 at 4.8 µg/L, lower than the level of 44 µg/L found during the 2007 semi-annual sampling event, and falling below the Part 201 GSI criterion of 29 µg/L. Total cadmium continues to be detected in MW-J2 at levels over the Part 201 criterion, but the corresponding dissolved cadmium results fell below the GSI criterion. This indicates that copper and cadmium are more likely associated with suspended fines in the sample rather than actual groundwater quality, minimizing the potential for migration to the Red Cedar River. Both the total copper and total cadmium values were below the Worst Case Maximum Site Concentrations and the Final Acute Values (FAVs).

Total cyanide was analyzed for all 11 of the groundwater samples. At two location (MW-J2 and MW-24), available (amenable) cyanide (upon which the GSI, FAV and worst case concentration values are based) was also analyzed since the 2007 total cyanide levels at these locations were above the GSI and/or FAV criteria applicable to available cyanide. This would determine if available cyanide was present at levels above the GSI criterion of 5.2 µg/L or the FAV criterion of 44 µg/L. Total cyanide was detected at MW-J2 at 45 µg/L with a corresponding available cyanide concentration of < 2 µg/L, which is below the GSI criterion. Total cyanide was detected in MW-24 at 48 µg/L, with a corresponding available cyanide concentration of <2 µg/L, below the GSI criterion. The results support historical sampling results for the Site, which showed the concentrations of free cyanide (when detected) were always less than 30 percent of the measured total cyanide concentration. Therefore the total cyanide concentration of 11 µg/L at MW-26 and 14 2 µg/L at MW-17 are considered to represent an associated available cyanide value below the GSI criterion of 5.2 2 µg/L.

Volatile Organic Compounds

A summary of the analytical results for volatile organic compounds (VOCs) in comparison to the MDEQ Generic GSI cleanup criteria, Worst Case Maximum Site Concentration values, and the MDEQ Mixing Zone FAVs is presented in Table 1.

Exceedences of the GSI values continued to be detected in monitoring well MW-02 which shows the highest levels of residual VOCs at the Site. Cis-1,2-dichloroethene (cis-1,2-DCE) was found at 600 μg/L, a decrease from the level found in 2007 and dropping below the GSI criterion of 620 μg/L. Trichloroethene (TCE) was detected at 3,600 μg/L above the GSI criterion of 200 μg/L), slightly higher than the 2007 concentration and rising just above the FAV of 3,500 μg/L. The TCE concentration remains below the worst case concentration of 4,200 μg/L upon which the FAV was determined. MW-02 is located along the eastern Site boundary in the vicinity of former SWMU L, and is an upgradient Site well based on the determined shallow westerly groundwater flow direction. The TCE levels at MW-02 have remained relatively constant since 2003, while monitoring wells downgradient of this area show more significant declines from the TCE levels as shown in Table 1. Downgradient well results from MW-24, MW-17, MW-B1 and MW-11 show that levels are significantly lower, ranging between 0.60 μg/L to 11 μg/L, below the GSI criterion. This indicates that though there remains residual source material in the vicinity of MW-02, migration of contaminants from this location is limited by effective and on-going natural attenuation processes.

TCE degradation products cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride and ethene and ethane have been detected in the downgradient wells. Cis-1,2-DCE was detected in five downgradient wells (MW-26, MW-17, MW-B1, MW-14 and MW-11) at levels ranging from 0.77 J μg/L to 300 μg/L, below the GSI criterion. Vinyl chloride continues to be detected in MW-B1 (56 μg/L) and MW-17 (26 μg/L) at levels above the GSI criterion of 15 μg/L. Though Mixing Zone FAVs were not developed for vinyl chloride, the maximum concentration of vinyl chloride detected on Site was 330 μg/L detected at MW-17 in November 2003. This maximum value was used by the MDEQ in modeling the estimated surface water concentration at the discharge point and comparison to GSI criteria using the MDEQ 90Q10 flow value for the Red Cedar River of 3.8 cubic feet per second. The predicted concentration at the surface water discharge point was considered within acceptable limits. Therefore the detected vinyl chloride values of 26 to 56 μg/L, which are an order of magnitude below the 2003 maximum concentration used in the modeling, are considered to be within acceptable limits.

No other VOC compounds were detected in any of the wells in excess of the generic GSI criteria.

MNA Parameters

The analytical results for MNA parameters for the two wells (MW-B1 and MW-17) are summarized in Table 2 in comparison to the 2007 values. The results indicate that degradation is continuing to occur in downgradient locations. Specifically, the analytical data show the presence of TCE degradation by-products at higher levels than the parent compound TCE in downgradient wells. As shown on Table 3, endpoint daughter product, ethane and ethylene, were detected in both MW-17 (0.83 J μg/L and 1.3 μg/L) and in MW-B1 (2.3 μg/L and 1.4 μg/L) indicating that degradation processes are effectively reducing TCE by-products to the endpoint product ethylene which poses no risk.

BASELINE ECOLOGICAL RISK ASSESSMENT

A BERA was conducted in response to the U.S.EPA December 1, 2006 Final Decision for the JCI Former Stanley Tool Facility, Fowlerville, Michigan which recommended that additional ecological testing be conducted to:

- Ensure contaminants were not present in the stream at levels deemed harmful to aquatic life; and

- Define areas with exceedences falling between preliminary screening criteria, specifically the Threshold Effect Concentrations (TECs) and Probable Effects Concentrations (PECs).

- Utilizes results of the BERA and previous site investigation data to isolate the areas of sediment that will be removed and to establish site-specific cleanup goals

The TECs and PECs are literature-based values for freshwater ecosystems used by the MDEQ as screening criteria. TEC values are defined as threshold concentrations below which adverse effects to the most sensitive of ecological receptors are not expected to occur. PECs are defined as concentrations above which adverse effects to the most sensitive of ecological receptors probably would occur. These adverse effects are typically determined by exposure by the most sensitive of ecological receptors in high-quality, freshwater ecosystems. The Middle Fork of the Red Cedar River is not considered to be a high-quality, freshwater ecosystem but rather a shallow, warm water stream which is too small to be navigated safely and too shallow to support a sports fishery or attract recreational activities. Therefore the TECs and PECs represent worst-case values which were refined using information gathered during the BERA to develop site-specific cleanup levels that are more applicable to the actual stream conditions.

The BERA utilized the Triad Approach as defined in the *Sediment Classification Methods Compendium (*EPA, 1992b), to further investigate potential ecological risks. The Triad Approach incorporates measures of sediment chemistry (chemical contamination), sediment bioassays (toxicity) and benthic communities (changes in benthic community structure) to support the establishment of site-specific sediment clean-up levels. The complete BERA is presented Attachment 3 and includes sediment sampling, bioassay testing and community survey results, as well as associated risk calculations and assumptions.

BERA Proposed Cleanup Objectives Summary

The BERA addressed the following contaminants of potential concern (COPCs) that have been detected in the sediments of the Red Cedar River; polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), and select heavy metals.

PCBs and PAHs were not detected or detected infrequently in the BERA sediment samples. As such, a site-specific cleanup level cannot be determined from the BERA dataset for these contaminants.

As presented in the FCMP (ET/W, 2004), an ecological-based, sediment cleanup value of 1 mg/kg, as a surface weighted average concentration (SWAC) was proposed for PCBs. The site-wide SWAC concentration for PCBs calculated from historical site data (0.1526 mg/kg) does not exceed this proposed cleanup level.

For the total PAHs, the mid-point of the TEC and PEC is proposed as the cleanup level (12.205 μg/kg-total PAH at 1% organic carbon). The maximum normalized total PAH concentration in the historic dataset (ET/W, 2004) is 5.470 μg total PAH/kg, and does not exceed the proposed cleanup level.

For the remaining COCs in sediments of the Red Cedar River, the calculated BERA cleanup objectives are summarized below along with the literature-based TEC and PEC values cleanup levels:

Total Metals	Chromium	Copper	Lead	Nickel	Zinc
Threshold Effects Concentration (mg/Kg)	43.4	31.6	35.8	22.7	121
Probable Effects Concentration (mg/Kg)	110	150	130	48.6	459
Proposed BERA Cleanup Objectives (mg/Kg)	133	150	130	58	527

The BERA data indicate that those metal concentrations identified in the *February 2004 Earth Tech Technical Memorandum: Sediment Quality Survey, Preliminary Sediment Cleanup Criteria and Data Evaluation for the Red Cedar River, Former Stanley Tools, Fowlerville, MI*, which fell between the literature-based screening TEC and PEC values are not considered to pose a risk to aquatic life in the Middle Fork of the Red Cedar.

The selection of these cleanup levels are supported by the sediment chemistry data, bioassay results, and community survey results for samples SD-E2-003, SD-C1-005, and SC-A1-006. Concentrations of chromium, lead, nickel and/or zinc exceeded published PEC concentrations in these three samples. However, toxic effects to benthic organisms were observed in the bioassays results only for locations SD-E2-003 and SD-C1-005. At SD-E2-003, lead is clearly the risk driver; at SD-C1-005, nickel and zinc are the risk drivers.

Although the concentrations of chromium, nickel and zinc at SD-A1-006 exceeded their respective PEC values, no toxic effects were found in the bioassay. In addition, MBI values for this location were the lowest observed at any of the community survey locations. Therefore, the observed concentrations of these contaminants at SD-A1-006 are proposed as their clean-up objectives.

The concentration of lead found in sediments at SD-E2-003 (789 mg/kg) is well above published TEC and PEC levels. It is notable however, that lead has not been detected at highly elevated concentrations within any other investigative sediment sample collected in the River at or near the Site. Specifically, of the 133 historic (ET/W, 2004) and BERA-related sediment samples collected and analyzed for lead excluding sample SD-E2-003, the maximum and mean concentrations observed, were 97 mg/kg (at SD-L1), and 13.3 mg/kg, respectively. These values are below the published PEC value (130 mg/kg) for this contaminant. Because of the lack of data between the extreme value detected at SD-E2-003 and the remaining sample population from which inferences may be drawn regarding observable toxic effects, the published PEC value for lead is considered appropriate as a clean-up objective.

Elevated concentrations of copper in sediments in the Red Cedar River are co-located with similar elevated concentrations of chromium, nickel and/or zinc. Although the concentrations of copper in the BERA sediment samples are somewhat elevated in samples SD-E2-003, SD-C1-005, and SC-A1-006, copper does not appear to drive risk in any samples. Thus, the published PEC value for copper is considered appropriate as a clean-up objective.

A comparison of the proposed BERA cleanup objectives to previous sediment sample results shows the following sample locations with one or more metals above the BERA-determined values:

Sample ID	Sample Date	Depth (in)	Total Cr (mg/Kg)	Total Cu (mg/Kg)	Total Ni (mg/Kg)	Total Zn (mg/Kg)
SD-A1	2003	0 - 12	97	85	**71**	372
SD-C1-005	2007	0 - 6	77.2	107	**267**	**675**
SD-E1	2003	0 - 12	**181**	**230**	**87**	289
SD-E2	2003	0 - 12	**1760**	**1370**	**189**	**1930**
SD-E2	2003	12 - 24	**396**	**513**	**165**	**721**
SD-E2-003	2007	0 - 6	112	133	43.5	158
SD-H1	2003	0 - 12	**771**	**563**	**150**	**784**
SE/RC-1/3	1991	0 - 3	**1420**	**769**	**374**	**1590**
SE/RC-2/3	1991	0 - 3	**240**	**227**	**133**	232
SE/RC-3/3	1991	0 - 3	74.8	114	**77.9**	**658**
SE/RC-3/12	1991	6 - 12	**252**	421	**349**	**921**
SE/RC-5/3	1991	0 - 3	**451**	302	**87.9**	425
SE/RC-6/2	1991	6 - 12	**448**	713	**432**	**2120**
SE/RC-7/1	1994	0 - 3	**200**	**175**	**62.2**	163
SE/RC-7/2	1994	6 - 12	**690**	**622**	**267**	466
SE/RC-9/1	1994	0 - 3	**170**	108	**67.1**	152
SE/RC-9/2	1994	6 - 12	**558**	**293**	**117**	463
SRC-17	2000	0 – 0	**404**	NA	NA	NA
BERA Clean-Up Objective (mg/Kg)			133	150	58	527

Bold value indicate an exceedence of the clean-up objective

The estimated volume of sediments listed above that will be removed as part of the Final Corrective Measures (assuming a 1 to 2 foot removal depth) is approximately 900 to 1,700 cubic yards. Upon sediment removal, confirmation samples (0-6 inch depth) will be collected from each dredge area. A representative average concentration of residual COCs will be calculated to demonstrate compliance with the proposed cleanup objectives.

PROPOSED WELL RELOCATION/ABANDONMENT PLAN

The groundwater monitoring results indicate that conditions of the Site are stable following the soil removal action. Migration of contaminated groundwater to Red Cedar River continues to be under control and groundwater flow directions remain constant. The BERA has allowed the identification and isolation of areas of sediment that will be removed and has established site-specific cleanup goals to ensure protection of ecological receptors over the long term.

The approved groundwater monitoring program was designed to provide sufficient rounds of data to satisfy the Agency that groundwater contaminant migration is, and will remain, under control while natural attenuation mechanisms degrade residual contaminants in shallow groundwater over the long term. The approved GWMP even without sample results for damaged wells MW-25 and MW-08 has effectively accomplished this. As indicated in Section 6.2.1, following two years of semi-annual groundwater sampling (4 sampling events), the GWMP will be assessed to determine whether the program an be modified, reduced or terminated. This GWMP assessment will be performed after the 1st semi-annual event in 2009.

The proposed well relocation and replacement plan has been designed to replace the wells currently in the approved program which either have been damaged or are at risk of being damaged as part of the upcoming facility expansion construction. There are five wells currently in the GWMP that have been or are at risk of being damaged: MW-08, MW-11, MW-25, MW-26 and MW-J2. Based on the proposed expansion footprint provided in Attachment A, MW-11 along the west wall of the facility is considered at risk of being damaged and is proposed for removal and replacement. MW-11 will be relocated approximately 70 feet west of damaged well MW-25 at the base of the bermed area shown in Figure 4. Damaged well MW-25 will then be properly abandoned and not replaced since MW-11 will provide sufficient data in this area of the Site. Damaged well MW-08 will be properly abandoned and replaced in the same proximity at the base of the bermed area as it will be used in lieu of MW-11 in providing information along the Site's south boundary.

MW-26 and MW-J2 are located in the proposed floodplain mitigation area. These wells will be properly abandoned as this area is expected to be prone to flooding under the proposed floodplain filling and mitigation plan currently under review by the MDEQ. MW-26 and MW-J2 will be relocated outside the proposed flood mitigation boundary approximately 100 feet to the south, along the river edge to continue to monitor groundwater at the river boundary. Based on the map, the proposed floodplain mitigation boundary abuts the existing SWMU A to the north which prevents moving the wells in that direction. The west perimeter of the Site nearest the river is then be monitored by MW-22, MW-A2, MW-24, MW-B1 and MW-B2 as well as relocated MW-26 and MW-J2 which is more than adequate to properly monitor groundwater flow to the river

All remaining wells not in the GWMP that are located in either the proposed facility expansion footprint or in the proposed floodplain fill or mitigation areas will be properly abandoned. This includes the following twelve wells: MW-03, MW-04, MW-05, MW-09, MW-10, MW-18, MW-19, MW-E2, MW-JC and MW-BKC1, BKC2 and BKC3.

Three wells not in the GWMP (MW-06, MW-07, and MW-12) located in or adjacent to the existing American Compounding facility were found to have been either covered over or removed as a result of previous construction activities during the 2007 well survey. Therefore these wells cannot be properly abandoned.

An additional three wells located in the fenced area north of the facility (MW-G1, MW-G2 and OW-16) and off-Site well MW-26C, located on approximately 600 feet west of the river could not be found during the well survey. If these wells are found and not at risk of being compromised as part of the upcoming construction they will be left in place until such time as the GWMP can be terminated.

CONCLUSION

The first year of semi-annual sampling results show that groundwater migration continues to remain under control at the Site following the soil removal action. In the vicinity of upgradient well, MW-02, VOC levels have remained similar to those found in 2003, but there is no significant migration from this location, as shown by downgradient well results. Downgradient wells MW-24, MW-17, MW-B1 and MW-11 show that total VOC levels are significantly lower than detected in 2003 and the concentrations have remained well below the total VOC levels observed in MW-02 since 2003. This indicates that though there remains residual source material in the vicinity of MW-02, migration of contaminants from this location is limited by effective and on-going natural attenuation processes.

Site-specific cleanup objectives determined in the BERA were exceeded in defined areas for chromium, copper, nickel and zinc which will be addressed as part of a sediment removal action. No additional contaminants were present in sediments at levels above the defined risk-based levels

Based on the BERA and groundwater sampling results, the current GWMP, without the two damaged wells (MW-08 and MW-25) has effectively monitored the existing groundwater plume and no significant groundwater migration has been found. This information along with the MNA results shows that natural attenuation mechanisms are effectively controlling contaminant migration in shallow groundwater at the Site. Therefore it is recommended that existing monitoring wells currently not in the GWMP that fall within the proposed expansion or floodplain filling footprints along with damaged well MW-25 be properly abandoned as these wells are not necessary in ensuring the effectiveness of the corrective action conducted at the Site nor the long-term protection of the Red Cedar River. There are five wells currently in the GWMP that have been or are at risk of being damaged by American Compounding's previous and proposed construction activities: MW-08, MW-11, MW-25, MW-26 and MW-J2. These wells will be relocated and replaced to ensure they can be effectively sampled for the next year.

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Tables

TABLES

Table 1
Historical Summary of Detected Compounds and Analytes in Groundwater Samples
Former JCI Stanley Tools Site
Fowlerville, Michigan

+2 -1 OK +2 ok met OK OK

Well ID: / Sample Date: / Compound	MW-02 7/31/2007	MW-02 3/5/2008	MW-11 [1] GSI Comp 7/31/2007	MW-11 [1] GSI Comp 3/5/2008	MW-14 [1] GSI Comp 8/1/2007	MW-14 [1] GSI Comp 3/6/2008	MW-17 [1] GSI Comp 8/1/2007	MW-17 [1] GSI Comp 3/5/2008	MW-21 [1] GSI Comp 8/1/2007	MW-21 [1] GSI Comp na	MW-22 [1] GSI Comp 8/1/2007	MW-22 [1] GSI Comp 3/5/2008	MW-24 [1] GSI Comp 8/1/2007	MW-24 [1] GSI Comp 3/6/2008	MW-26 [1] GSI Comp 8/1/2007	MW-26 [1] GSI Comp 3/5/2008	MDEQ GENERIC GSI Criteria (ug/L) [2]	Final Acute Value (ug/L) [3]	Reported Worst-case Maximum Concentration (ug/L) [3]
Volatile Organic Compounds (VOCs) (ug/L)																			
Acetone	<60	<250	<1.2	<5.0	<1.2	<5.0	1.8 J	1.3 JB	1.4 J	na	2.4 J	4.6 JB	1.4 J	<5.0	<1.2	<5.0	1,700	-	-
Benzene	<5.9	<50	<0.12	<1.0	<0.12	<1.0	0.35 J	0.18 J	<0.12	na	0.45 J	0.38 J	<0.12	<1.0	<0.12	<1.0	200 (X)	-	-
Chlorobenzene	<6.0	<50	<0.12	<1.0	<0.12	<1.0	2.4	1.2	<0.12	na	3.1	3.5	8	4.6	<0.12	<1.0	47	-	-
1,1-DCA	<3.8	<50	0.89 J	0.26 J	2.7	2.4	2.9	1.4	<0.076	na	<0.076	<1.0	<0.076	<1.0	0.57 J	0.45 J	740	-	-
1,1-DCE	<7.0	<50	<0.14	<1.0	0.35 J	<1.0	<0.14	<1.0	<0.14	na	<0.14	<1.0	<0.14	<1.0	<0.14	<1.0	65 (X)	-	
cis-1,2-DCE	**800**	600	1	0.77 J	23	23	49	30	<0.17	na	<0.17	<1.0	<0.17	<1.0	26	15	620	-	910
trans-1,2-DCE	32 J	23 J	<0.16	<1.0	2.6	2.5	17	13	<0.16	na	<0.16	<1.0	<0.16	<1.0	0.46 J	<1.0	1,500	-	-
Toluene	4.0 J	<50	<0.072	0.11 J	0.29 J	<1.0	0.22 J	0.080 J	0.29 J	na	0.22 J	<1.0	0.090 J	<1.0	0.36 J	<1.0	140	-	-
TCE	**3,400**	**3,600**	0.69 J	3.0	<0.17	<1.0	7.1	3.6	<0.17	na	<0.17	<1.0	<0.17	0.60 J	0.64 J	<1.0	200 (X)	3,500	4,200
Vinyl Chloride	<8.7	<50	<0.17	<1.0	12	4.4	**48**	**26**	<0.17	na	<0.17	<1.0	<0.17	<1.0	13	7.4	15	ND	300 [4]
Xylenes (total)	<12	<100	<0.23	<2.0	<0.23	<2.0	<0.23	<2.0	<0.23	na	<0.23	<2.0	<0.23	<2.0	<0.23	<2.0	-	-	-
1,2-Dichlorobenzene	<3.3	<50	<0.065	<1.0	<0.065	<1.0	0.74 J	0.36 J	<0.065	na	<0.065	<1.0	<0.065	<1.0	<0.065	<1.0	16	-	-
1,4-Dichlorobenzene	<6.6	<50	<0.13	<1.0	<0.13	<1.0	0.42 J	0.26 J	<0.13	na	<0.13	<1.0	0.26 J	<1.0	<0.13	<1.0	13	-	-
1,2,4-Trimethylbenzene	<6.6	<50	<0.13	<1.0	<0.13	<1.0	<0.13	<1.0	<0.13	na	<0.13	<1.0	<0.13	<1.0	<0.13	<1.0	17	-	-
Methylene chloride	<2.5	8.5 J	<0.051	<1.0	<0.051	<1.0	<0.051	<1.0	<0.051	na	<0.051	<1.0	<0.051	<1.0	<0.051	<1.0	940 (X)	-	-
10 MI Metals (ug/L)																			
Arsenic (dissolved)	na	na	<0.74	<5.0	na	na	4.1 J	<5.0	4.2 J	na	66	64	68	30	6.6	2.7 J	NA	680	161
Arsenic (total)	na	na	<0.74	<5.0	na	na	3.4 J	1.1 J	11	na	88	86	81	36	10	4.6 J	150 (X)	680	161
Barium (dissolved)	na	na	110	57 J	na	na	130	81 J	410	na	320	360	190	180	170	110	1,900 (G,X)	-	-
Barium (total)	na	na	110	65 J	na	na	130	84 J	470	na	370	410	200	200	190	120	1,900 (G,X)	-	-
Cadmium (dissolved)	na	na	<0.062	<0.20	na	na	<0.062	<0.20	<0.062	na	<0.062	<0.20	<0.062	<0.20	<0.062	<0.20	6.2 (G,X)	77	13
Cadmium (total)	na	na	0.069 J	0.066 J	na	na	<0.062	<0.20	0.10 J	na	<0.062	<0.20	<0.062	<0.20	<0.062	<0.20	6.2 (G,X)	77	13
Chromium (dissolved)	na	na	0.96 J	5	<0.31	na	<0.31	<1.0	<0.31	na	<0.31	<1.0	<0.31	<1.0	<0.31	<1.0	230 (G,X)	-	-
Chromium (total)	na	na	1.4	4.8	na	na	<0.31	<1.0	<0.31	na	<0.31	0.32 J	<0.31	<1.0	<0.31	<1.0	230 (G,X)	-	-
Chromium hexavalent (dissolved)	na	na	na	na	na	na	<0.5	na	0.6 J	na	0.9 J	0.7 J	<0.5	<5.0	<0.5	<5.0	11	32	20
Chromium hexavalent (total)	na	na	na	na	na	na	0.8 J	na	1.3 J	na	0.9 J	1.2 J	<0.5	<5.0	0.8 J	1.7 J	11	32	20
Copper (dissolved)	na	na	3.9	4.3	na	na	0.45 J	0.67 J	0.67 J	na	0.76 J	0.62 J	<0.33	0.65 J	0.42 J	1.0	29 (G)	144	103
Copper (total)	na	na	44	4.8	na	na	0.52 J	1.0 J	1.4	na	2	1.2	0.33 J	<1.0	29	0.49 J	29 (G)	144	103
Cyanide (total)	na	na	<1.20	<5.0	<1.20	<5.0	23.2	14	<1.20	na	2.01 J	2.1 J	63.9	48	9.7	11	NA	NA	
Cyanide (available)	na	na	na	na	na	na	na	na	na	na	na	na	na	<2.0	na	na	5.2	44	10
Lead (total)	na	na	1.3	<1.0	na	na	<0.33	<1.0	<0.33	na	<0.33	<1.0	<0.33	<1.0	0.83 J	<1.0	45 (G,X)	-	-
Mercury (dissolved)	na	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	0.0013	-	-
Mercury (total)	na	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	0.0013	-	-
Nickel (dissolved)	na	na	7.9 J	na	na	na	17	30	3.5 J	na	12	14	2.5 J	2.2 J	13	12	170 (G)	5,800	1,180
Nickel (total)	na	na	12	na	na	na	19	33	3.8 J	na	13	12	2.8 J	3.9 J	15	10	170 (G)	5,800	1,180
Selenium (dissolved)	na	na	0.94 J	<1.0	na	na	<0.92	<1.0	<0.92	na	0.93 J	<1.0	<0.92	<1.0	<0.92	<1.0	5	-	-
Selenium (total)	na	na	<0.92	<1.0	na	na	<0.92	<1.0	<0.92	na	<0.92	<1.0	0.98 J	<1.0	<0.92	<1.0	5	-	-
Silver (dissolved)	na	na	<0.12	<0.20	na	na	<0.12	<0.20	<0.12	na	<0.12	<0.20	<0.12	<0.20	<0.12	<0.20	0.2 (M)	-	-
Silver (total)	na	na	<0.12	<0.20	na	na	<0.12	<0.20	<0.12	na	<0.12	<0.20	<0.12	<0.20	<0.12	<0.20	0.2 (M)	-	-
Zinc (dissolved)	na	na	170	180	na	na	3.6 J	5.5 J	1.6 J	na	7.7 J	4.9 J	6.9 J	5.7 J	1.7 J	5.0 J	380 (G)	-	-
Zinc (total)	na	na	280	220 B	na	na	35	18	26	na	50	23	34	6.5 J	35	12	380 (G)	-	-

Notes:

[1]: Compliance monitoring well
[2]: MDEQ Part 201 RRD Op Memo No. 1, January 23, 2006 and Earth Tech/Weston Solutions 2004 Human Health Environmental Indicator
[3]: WHMD Final Determination of a Mixing Zone Request Letter, February 23, 2006 and an MDEQ Interoffice Communication, December 13, 2005
[4]: In Final Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) Report, the maximum concentration of vinyl chloride detected at Site was 300 ug/L.
na indicates "not analyzed"
B: Background as defined by R 299.5701(b) may be substituted if higher than the calculated cleanup criterion.
G: GSI criterion depends on the pH or water hardness, or both, of the receiving surface water.
J: Analyte was detected, but the concentration is greater than the MDL and less than the RL.
M: Calculated criterion is below the analytical target detection limit; therefore, the criterion defaults to the target detection limit.
X: The GSI criterion shown in the generic cleanup criterion tables is not protective for surface water that is used as a drinking water source.
NA: Criterion or value is not available or, in the case of background and chemical abstract service numbers, not applicable.
ND: FAV not developed
*Black **BOLD** values indicate the value exceeds the GSI criterion*
*Red **BOLD** values indicate the value exceeds the FAV*

+2 = both sampling events exceeded screening value
+1 = most recent sampling event exceeded screening value
-1 = previous sampling event (2007) exceeded screening value
OK = No exceedances either sampling event
mc- = unanalyzed constituents previous sampling event

mc+ = unanalyzed constituents recent sampling event
mc+2 = unanalyzed constituents both sampling events
*O = specific constituents unanalyzed

Table 1
Historical Summary of Detected Compounds and Analytes in Groundwater Samples
Former JCI Stanley Tools Site
Fowlerville, Michigan

Well ID: / Sample Date: / Compound	MW-02 7/31/2007	MW-02 3/5/2008	MW-11 [1] GSI Comp 7/31/2007	MW-11 [1] GSI Comp 3/5/2008	MW-14 [1] GSI Comp 8/1/2007	MW-14 [1] GSI Comp 3/6/2008	MW-17 [1] GSI Comp 8/1/2007	MW-17 [1] GSI Comp 3/5/2008	MW-21 [1] GSI Comp 8/1/2007	MW-21 [1] GSI Comp na	MW-22 [1] GSI Comp 8/1/2007	MW-22 [1] GSI Comp 3/5/2008	MW-24 [1] GSI Comp 8/1/2007	MW-24 [1] GSI Comp 3/6/2008	MW-26 [1] GSI Comp 8/1/2007	MW-26 [1] GSI Comp 3/5/2008	MDEQ GENERIC GSI Criteria (ug/L) [2]	Final Acute Value (ug/L) [3]	Reported Worst-case Maximum Concentration (ug/L) [3]
Volatile Organic Compounds (VOCs) (ug/L)																			
Acetone	<60	<250	<1.2	<5.0	<1.2	<5.0	1.8 J	1.3 JB	1.4 J	na	2.4 J	4.6 JB	1.4 J	<5.0	<1.2	<5.0	1,700	-	-
Benzene	<5.9	<50	<0.12	<1.0	<0.12	<1.0	0.35 J	0.18 J	<0.12	na	0.45 J	0.38 J	<0.12	<1.0	<0.12	<1.0	200 (X)	-	-
Chlorobenzene	<6.0	<50	<0.12	<1.0	<0.12	<1.0	2.4	1.2	<0.12	na	3.1	3.5	8	4.6	<0.12	<1.0	47	-	-
1,1-DCA	<3.8	<50	0.89 J	0.26 J	2.7	2.4	2.9	1.4	<0.076	na	<0.076	<1.0	<0.076	<1.0	0.57 J	0.45 J	740	-	-
1,1-DCE	<7.0	<50	<0.14	<1.0	0.35 J	<1.0	<0.14	<1.0	<0.14	na	<0.14	<1.0	<0.14	<1.0	<0.14	<1.0	65 (X)	-	
cis-1,2-DCE	**800**	600	1	0.77 J	23	23	49	30	<0.17	na	<0.17	<1.0	<0.17	<1.0	26	15	620	-	910
trans-1,2-DCE	32 J	23 J	<0.16	<1.0	2.6	2.5	17	13	<0.16	na	<0.16	<1.0	<0.16	<1.0	0.46 J	<1.0	1,500	-	-
Toluene	4.0 J	<50	<0.072	0.11 J	0.29 J	<1.0	0.22 J	0.080 J	0.29 J	na	0.22 J	<1.0	0.090 J	<1.0	0.36 J	<1.0	140	-	-
TCE	**3,400**	**3,600**	0.69 J	3.0	<0.17	<1.0	7.1	3.6	<0.17	na	<0.17	<1.0	<0.17	0.60 J	0.64 J	<1.0	200 (X)	3,500	4,200
Vinyl Chloride	<8.7	<50	<0.17	<1.0	12	4.4	**48**	**26**	<0.17	na	<0.17	<1.0	<0.17	<1.0	13	7.4	15	ND	300 [4]
Xylenes (total)	<12	<100	<0.23	<2.0	<0.23	<2.0	<0.23	<2.0	<0.23	na	<0.23	<2.0	<0.23	<2.0	<0.23	<2.0	-	-	-
1,2-Dichlorobenzene	<3.3	<50	<0.065	<1.0	<0.065	<1.0	0.74 J	0.36 J	<0.065	na	<0.065	<1.0	<0.065	<1.0	<0.065	<1.0	16	-	-
1,4-Dichlorobenzene	<6.6	<50	<0.13	<1.0	<0.13	<1.0	0.42 J	0.26 J	<0.13	na	<0.13	<1.0	0.26 J	<1.0	<0.13	<1.0	13	-	-
1,2,4-Trimethylbenzene	<6.6	<50	<0.13	<1.0	<0.13	<1.0	<0.13	<1.0	<0.13	na	<0.13	<1.0	<0.13	<1.0	<0.13	<1.0	17	-	-
Methylene chloride	<2.5	8.5 J	<0.051	<1.0	<0.051	<1.0	<0.051	<1.0	<0.051	na	<0.051	<1.0	<0.051	<1.0	<0.051	<1.0	940 (X)	-	-
10 MI Metals (ug/L)																			
Arsenic (dissolved)	na	na	<0.74	<5.0	na	na	4.1 J	<5.0	4.2 J	na	66	64	68	30	6.6	2.7 J	NA	680	161
Arsenic (total)	na	na	<0.74	<5.0	na	na	3.4 J	1.1 J	11	na	88	86	81	36	10	4.6 J	150 (X)	680	161
Barium (dissolved)	na	na	110	57 J	na	na	130	81 J	410	na	320	360	190	180	170	110	1,900 (G,X)	-	-
Barium (total)	na	na	110	65 J	na	na	130	84 J	470	na	370	410	200	200	190	120	1,900 (G,X)	-	-
Cadmium (dissolved)	na	na	<0.062	<0.20	na	na	<0.062	<0.20	<0.062	na	<0.062	<0.20	<0.062	<0.20	<0.062	<0.20	6.2 (G,X)	77	13
Cadmium (total)	na	na	0.069 J	0.066 J	na	na	<0.062	<0.20	0.10 J	na	<0.062	<0.20	<0.062	<0.20	<0.062	<0.20	6.2 (G,X)	77	13
Chromium (dissolved)	na	na	0.96 J	5	<0.31	na	<0.31	<1.0	<0.31	na	<0.31	<1.0	<0.31	<1.0	<0.31	<1.0	230 (G,X)	-	-
Chromium (total)	na	na	1.4	4.8	na	na	<0.31	<1.0	<0.31	na	<0.31	0.32 J	<0.31	<1.0	<0.31	<1.0	230 (G,X)	-	-
Chromium hexavalent (dissolved)	na	na	na	na	na	na	<0.5	na	0.6 J	na	0.9 J	0.7 J	<0.5	<5.0	<0.5	<5.0	11	32	20
Chromium hexavalent (total)	na	na	na	na	na	na	0.8 J	na	1.3 J	na	0.9 J	1.2 J	<0.5	<5.0	0.8 J	1.7 J	11	32	20
Copper (dissolved)	na	na	3.9	4.3	na	na	0.45 J	0.67 J	0.67 J	na	0.76 J	0.62 J	<0.33	0.65 J	0.42 J	1.0	29 (G)	144	103
Copper (total)	na	na	**44**	4.8	na	na	0.52 J	1.0 J	1.4	na	2	1.2	0.33 J	<1.0	29	0.49 J	29 (G)	144	103
Cyanide (total)	na	na	<1.20	<5.0	<1.20	<5.0	23.2	14	<1.20	na	2.01 J	2.1 J	63.9	48	9.7	11	NA	NA	
Cyanide (available)	na	na	na	na	na	na	na	na	na	na	na	na	na	<2.0	na	na	5.2	44	10
Lead (total)	na	na	1.3	<1.0	na	na	<0.33	<1.0	<0.33	na	<0.33	<1.0	<0.33	<1.0	0.83 J	<1.0	45 (G,X)	-	-
Mercury (dissolved)	na	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	0.0013	-	-
Mercury (total)	na	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	na	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	0.0013	-	-
Nickel (dissolved)	na	na	7.9 J	na	na	na	17	30	3.5 J	na	12	14	2.5 J	2.2 J	13	12	170 (G)	5,800	1,180
Nickel (total)	na	na	12	na	na	na	19	33	3.8 J	na	13	12	2.8 J	3.9 J	15	10	170 (G)	5,800	1,180
Selenium (dissolved)	na	na	0.94 J	<1.0	na	na	<0.92	<1.0	<0.92	na	0.93 J	<1.0	<0.92	<1.0	<0.92	<1.0	5	-	-
Selenium (total)	na	na	<0.92	<1.0	na	na	<0.92	<1.0	<0.92	na	<0.92	<1.0	0.98 J	<1.0	<0.92	<1.0	5	-	-
Silver (dissolved)	na	na	<0.12	<0.20	na	na	<0.12	<0.20	<0.12	na	<0.12	<0.20	<0.12	<0.20	<0.12	<0.20	0.2 (M)	-	-
Silver (total)	na	na	<0.12	<0.20	na	na	<0.12	<0.20	<0.12	na	<0.12	<0.20	<0.12	<0.20	<0.12	<0.20	0.2 (M)	-	-
Zinc (dissolved)	na	na	170	180	na	na	3.6 J	5.5 J	1.6 J	na	7.7 J	4.9 J	6.9 J	5.7 J	1.7 J	5.0 J	380 (G)	-	-
Zinc (total)	na	na	280	220 B	na	na	35	18	26	na	50	23	34	6.5 J	35	12	380 (G)	-	-

Notes:

[1]: Compliance monitoring well

[2]: MDEQ Part 201 RRD Op Memo No. 1, January 23, 2006 and Earth Tech/Weston Solutions 2004 Human Health Environmental Indicator

[3]: WHMD Final Determination of a Mixing Zone Request Letter, February 23, 2006 and an MDEQ Interoffice Communication, December 13, 2005

[4]: In Final Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) Report, the maximum concentration of vinyl chloride detected at Site was 300 ug/L.

na indicates "not analyzed"

B: Background as defined by R 299.5701(b) may be substituted if higher than the calculated cleanup criterion.

G: GSI criterion depends on the pH or water hardness, or both, of the receiving surface water.

J: Analyte was detected, but the concentration is greater than the MDL and less than the RL.

M: Calculated criterion is below the analytical target detection limit; therefore, the criterion defaults to the target detection limit.

X: The GSI criterion shown in the generic cleanup criterion tables is not protective for surface water that is used as a drinking water source.

NA: Criterion or value is not available or, in the case of background and chemical abstract service numbers, not applicable.

ND: FAV not developed

*Black **BOLD** values indicate the value exceeds the GSI criterion*

*Red **BOLD** values indicate the value exceeds the FAV*

Table 1
Historical Summary of Detected Compounds and Analytes in Groundwater Samples
Former JCI Stanley Tools Site
Fowlerville, Michigan

Well ID: / Sample Date: / Compound	MW-28 7/31/2007	MW-28 na	MW-28C 7/31/2007	MW-28C na	MW-A2 [1] GSI Comp 8/1/2007	MW-A2 [1] GSI Comp 3/5/2008	MW-B1[1] GSI Comp 8/1/2007	MW-B1[1] GSI Comp 3/5/2008	MW-B2 8/1/2007	MW-B2 3/4/2008	MW-J2 8/1/2007	MW-J2 3/4/2008	MW-OS1C 8/2/2007	MW-OS1C na	MDEQ GENERIC GSI Criteria (ug/L) [2]	Final Acute Value (ug/L) [3]	Reported Worst-case Maximum Concentration (ug/L) [3]
Volatile Organic Compounds (VOCs) (ug/L)																	
Acetone	<1.2	na	na	na	<1.2	<5.0	<6.0	<10	<1.2	<5.0	<1.2	<5.0	<1.2	na	1,700	-	-
Benzene	<0.12	na	na	na	<0.12	<1.0	<0.59	<2.0	<0.12	<1.0	<0.12	<1.0	<0.12	na	200 (X)	-	-
Chlorobenzene	<0.12	na	na	na	<0.12	<1.0	<0.60	<2.0	<0.12	<1.0	<0.12	<1.0	<0.12	na	47	-	-
1,1-DCA	<0.076	na	na	na	<0.076	<1.0	12	8.8	<0.076	<1.0	<0.076	<1.0	<0.076	na	740	-	-
1,1-DCE	<0.14	na	na	na	<0.14	<1.0	2.8 J	2.0	<0.14	<1.0	<0.14	<1.0	<0.14	na	65 (X)	-	
cis-1,2-DCE	<0.17	na	na	na	0.76 J	<1.0	470	300	<0.17	<1.0	<0.17	<1.0	<0.17	na	620	-	910
trans-1,2-DCE	<0.16	na	na	na	<0.16	<1.0	68	46	<0.16	<1.0	<0.16	<1.0	<0.16	na	1,500	-	-
Toluene	<0.0072	na	na	na	0.080 J	<1.0	<0.36	<2.0	0.37 J	0.11 J	0.35 J	0.080 J	0.64 J	na	140	-	-
TCE	<0.17	na	na	na	<0.17	<1.0	9	11	<0.17	<1.0	<0.17	<1.0	<0.17	na	200 (X)	3,500	4,200
Vinyl Chloride	<0.17	na	na	na	<0.17	<1.0	**58**	**56**	<0.17	<1.0	<0.17	<1.0	<0.17	na	15	ND	300 [4]
Xylenes (total)	<0.23	na	na	na	<0.23	<2.0	<0.64	<4.0	<0.23	<2.0	<0.23	<2.0	0.25 J	na	-	-	-
1,2-Dichlorobenzene	<0.065	na	na	na	<0.065	<1.0	<0.33	<2.0	<0.065	<1.0	<0.065	<1.0	<0.065	na	16	-	-
1,4-Dichlorobenzene	<0.13	na	na	na	<0.13	<1.0	<0.66	<2.0	<0.13	<1.0	<0.13	<1.0	<0.13	na	13	-	-
1,2,4-Trimethylbenzene	<0.13	na	na	na	<0.13	<1.0	<0.66	<2.0	<0.13	0.51 J	<0.13	<1.0	<0.13	na	17	-	-
Methylene chloride	<0.051	na	na	na	<0.051	<1.0	<0.25	0.28 J	<0.051		<0.051		<0.051	na	940 (X)	-	-
10 MI Metals (ug/L)																	
Arsenic (dissolved)	4.9 J	na	7.3	na	7.2	4.8 J	6.4	4.4 J	14	10	9.5	11	4.1 J	na	NA	680	161
Arsenic (total)	4.8 J	na	7.8	na	6.5	6.7	7.4	6.3	16	14	6.8	11	6.5	na	150 (X)	680	161
Barium (dissolved)	150	na	160	na	140	140	130	110	150	110	140	190	67 J	na	1,900 (G,X)	-	-
Barium (total)	170	na	170	na	140	150	140	120	160	140	54 J	180	68 J	na	1,900 (G,X)	-	-
Cadmium (dissolved)	<0.062	na	<0.062	na	<0.062	<0.20	<0.062	<0.20	<0.062	<0.20	1	0.53	<0.062	na	6.2 (G,X)	77	13
Cadmium (total)	<0.062	na	<0.062	na	<0.062	<0.20	<0.062	<0.20	<0.062	<0.20	**6.9**	1.2	<0.062	na	6.2 (G,X)	77	13
Chromium (dissolved)	<0.31	na	<0.31	na	<0.31	<1.0	<0.31	<1.0	<0.31	5.7	<0.31	<1.0	1.3	na	230 (G,X)	-	-
Chromium (total)	<0.31	na	<0.31	na	1.8	1.7	<0.31	<1.0	0.40 J	1.9	38	4.8	<0.31	na	230 (G,X)	-	-
Chromium hexavalent (dissolved)	na	na	na	na	<0.5	<5.0	<0.5	na	na	na	na	na	na	na	11	32	20
Chromium hexavalent (total)	na	na	na	na	<0.5	4.7 J	<0.5	na	na	na	na	na	na	na	11	32	20
Copper (dissolved)	<0.33	na	0.73 J	na	1.1	1.3	0.63 J	<1.0	0.39 J	0.63 J	1.1	0.81 J	7	na	29 (G)	144	103
Copper (total)	1.1	na	12	na	1.9	3.6	1.8	0.61 J	0.67 J	0.61 J	12	1.3	2.1	na	29 (G)	144	103
Cyanide (total)	<1.20	na	na	na	<1.20	<5.0	<1.20	<5.0	<1.20	<5.0	67.9	45	<1.20	na	NA	NA	
Cyanide (available)	na	na	na	na	na	na	na	na	na	na	na	<2.0	na	na	5.2	44	10
Lead (total)	0.95 J	na	0.57 J	na	<0.33	<1.0	<0.33	<1.0	<0.33	<1.0	9.3	0.67 J	2.1	na	45 (G,X)	-	-
Mercury (dissolved)	<0.039	na	<0.039	na	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	<0.039	na	0.0013	-	-
Mercury (total)	<0.039	na	<0.039	na	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	<0.039	<0.20	<0.039	na	0.0013	-	-
Nickel (dissolved)	2.6 J	na	2.1 J	na	3.3 J	4.0 J	130	140	na	na	11	na	1.6 J	na	170 (G)	5,800	1,180
Nickel (total)	2.8 J	na	2.0 J	na	5.5 J	7.9 J	150	160	na	na	43	na	1.9 J	na	170 (G)	5,800	1,180
Selenium (dissolved)	<0.92	na	<0.92	na	<0.92	<1.0	<0.92	<1.0	<0.92	<1.0	1.1	<1.0	1.3	na	5	-	-
Selenium (total)	<0.92	na	<0.92	na	<0.92	<1.0	<0.92	<1.0	<0.92	<1.0	<0.92	<1.0	1.2	na	5	-	-
Silver (dissolved)	<0.12	na	<0.12	na	0.14 J	<0.20	<0.12	<0.20	<0.12	<0.20	<0.12	<0.20	<0.12	na	0.2 (M)	-	-
Silver (total)	<0.12	na	<0.12	na	<0.12	<0.20	0.15 J	<0.20	<0.12	<0.20	<0.12	<0.20	<0.12	na	0.2 (M)	-	-
Zinc (dissolved)	1.6 J	na	13	na	2.7 J	9.7 J	44	38	2.1 J	7.3 J	3.7 J	5.7 J	6.4 J	na	380 (G)	-	-
Zinc (total)	170	na	20	na	6.6 J	17	85	62	5.2 J	9.6 J	63	20	7.6 J	na	380 (G)	-	-

Notes:

[1]: Compliance monitoring well

[2]: MDEQ Part 201 RRD Op Memo No. 1, January 23, 2006 and Earth Tech/Weston Solutions 2004 Human Health Environmental Indicator

[3]: WHMD Final Determination of a Mixing Zone Request Letter, February 23, 2006 and an MDEQ Interoffice Communication, December 13, 2005

[4]: In Final Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) Report, the maximum concentration of vinyl chloride detected at Site was 300 ug/L.

na indicates "not analyzed"

B: Background as defined by R 299.5701(b) may be substituted if higher than the calculated cleanup criterion.

G: GSI criterion depends on the pH or water hardness, or both, of the receiving surface water.

J: Analyte was detected, but the concentration is greater than the MDL and less than the RL.

M: Calculated criterion is below the analytical target detection limit; therefore, the criterion defaults to the target detection limit.

X: The GSI criterion shown in the generic cleanup criterion tables is not protective for surface water that is used as a drinking water source.

NA: Criterion or value is not available or, in the case of background and chemical abstract service numbers, not applicable.

ND: FAV not developed

*Black **BOLD** values indicate the value exceeds the GSI criterion*

*Red **BOLD** values indicate the value exceeds the FAV*

Table 1
Historical Summary of Detected Compounds and Analytes in Groundwater Samples
Former JCI Stanley Tools Site
Fowlerville, Michigan

Well ID: / Sample Date: / Compound	MW-OS3 8/2/2007	MW-OS3 na	MW-OS3C 8/2/2007	MW-OS3C na	MDEQ GENERIC GSI Criteria (ug/L) [2]	Final Acute Value (ug/L) [3]	Reported Worst-case Maximum Concentration (ug/L) [3]
Volatile Organic Compounds (VOCs) (ug/L)							
Acetone	<1.2	na	<1.2	na	1,700	-	-
Benzene	0.16 J	na	0.13 J	na	200 (X)	-	-
Chlorobenzene	<0.12	na	<0.12	na	47	-	-
1,1-DCA	2.6	na	<0.076	na	740	-	-
1,1-DCE	<0.14	na	<0.14	na	65 (X)	-	
cis-1,2-DCE	30	na	<0.17	na	620	-	910
trans-1,2-DCE	1.4	na	<0.16	na	1,500	-	-
Toluene	0.47 J	na	0.48 J	na	140	-	-
TCE	<0.17	na	<0.17	na	200 (X)	3,500	4,200
Vinyl Chloride	14	na	<0.17	na	15	ND	300 [4]
Xylenes (total)	0.24 J	na	<0.23	na	-	-	-
1,2-Dichlorobenzene	<0.065	na	<0.065	na	16	-	-
1,4-Dichlorobenzene	<0.13	na	<0.13	na	13	-	-
1,2,4-Trimethylbenzene		na		na	17	-	-
Methylene chloride	<0.051	na	<0.051	na	940 (X)	-	-
10 MI Metals (ug/L)							
Arsenic (dissolved)	4.1 J	na	<0.74	na	NA	680	161
Arsenic (total)	4.4 J	na	0.84 J	na	150 (X)	680	161
Barium (dissolved)	200	na	42 J	na	1,900 (G,X)	-	-
Barium (total)	63 J	na	44 J	na	1,900 (G,X)	-	-
Cadmium (dissolved)	<0.062	na	<0.062	na	6.2 (G,X)	77	13
Cadmium (total)	0.13 J	na	<0.062	na	6.2 (G,X)	77	13
Chromium (dissolved)	1.8	na	2.2	na	230 (G,X)	-	-
Chromium (total)	0.33 J	na	0.31 J	na	230 (G,X)	-	-
Chromium hexavalent (dissolved)	na	na	na	na	11	32	20
Chromium hexavalent (total)	na	na	na	na	11	32	20
Copper (dissolved)	9.2	na	0.86 J	na	29 (G)	144	103
Copper (total)	0.64 J	na	0.76 J	na	29 (G)	144	103
Cyanide (total)	<1.20	na	<1.20	na	NA	NA	
Cyanide (available)		na		na	5.2	44	10
Lead (total)	<0.33	na	<0.33	na	45 (G,X)	-	-
Mercury (dissolved)	**0.048 J**	na	<0.039	na	0.0013	-	-
Mercury (total)	**0.044 J**	na	<0.039	na	0.0013	-	-
Nickel (dissolved)	2.9 J	na	1.4 J	na	170 (G)	5,800	1,180
Nickel (total)	3.2 J	na	1.8 J	na	170 (G)	5,800	1,180
Selenium (dissolved)	1.3	na	1.9	na	5	-	-
Selenium (total)	<0.92	na	<0.92	na	5	-	-
Silver (dissolved)	<0.12	na	<0.12	na	0.2 (M)	-	-
Silver (total)	<0.12	na	<0.12	na	0.2 (M)	-	-
Zinc (dissolved)	8.8 J	na	0.85 J	na	380 (G)	-	-
Zinc (total)	8.1 J	na	7.0 J	na	380 (G)	-	-

Notes:
[1]: Compliance monitoring well
[2]: MDEQ Part 201 RRD Op Memo No. 1, January 23, 2006 and Earth Tech/Weston Solutions 2004 Human Health Environmental Indicator
[3]: WHMD Final Determination of a Mixing Zone Request Letter, February 23, 2006 and an MDEQ Interoffice Communication, December 13, 2005
[4]: In Final Migration of Contaminated Groundwater Under Control Environmental Indicator (EI) Report, the maximum concentration of vinyl chloride detected at Site was 300 ug/L.
na indicates "not analyzed"
B: Background as defined by R 299.5701(b) may be substituted if higher than the calculated cleanup criterion.
G: GSI criterion depends on the pH or water hardness, or both, of the receiving surface water.
J: Analyte was detected, but the concentration is greater than the MDL and less than the RL.
M: Calculated criterion is below the analytical target detection limit; therefore, the criterion defaults to the target detection limit.
X: The GSI criterion shown in the generic cleanup criterion tables is not protective for surface water that is used as a drinking water source.
NA: Criterion or value is not available or, in the case of background and chemical abstract service numbers, not applicable.
ND: FAV not developed
*Black **BOLD** values indicate the value exceeds the GSI criterion*
*Red **BOLD** values indicate the value exceeds the FAV*

Table 2
Historical Summary of Detected Monitored Natural Attenuation Parameters in Groundwater Samples
Former Stanley Tools Site
Fowlerville, Michigan

Well ID: / Sample Date: / Compound	MW-17 [1] GSI Comp 8/1/2007	MW-17 [1] GSI Comp 3/5/2008	MW-B1[1] GSI Comp 8/1/2007	MW-B1[1] GSI Comp 3/5/2008	MDEQ GENERIC GSI Criteria (ug/L) [2]
MNA Physical/Chemical Parameters (ug/L)					
Alkalinity (total)	410,000	360,000	360,000	390,000	-
Chemical Oxygen Demand	15,000	11,000	6,600	6,900	-
Ethane	3.9	0.83 J	3	2.3	-
Ethylene	3.3	1.3	1.9	1.4	-
Iron, Ferric (total)	427	300	193	100	-
Iron, Ferrous (total)	4,400	800	2,100	2,100	-
Iron (total)	4,800	1,100	2,300	2,200	-
Manganese (total)	220	420	270	220	6,500 (G,X)
Nitrogen, Nitrate + Nitrite	0.0059 J	180	<0.0037	<50	-
Hardness as $CaC0_3$	na	410,000	na	490,000	
Sulfate (total)	41,000	53,000	100,000	100,000	-
Sulfide (total)	<610	<1,000	<610	<1,000	-

[1]: Compliance monitoring well
[2]: MDEQ Part 201 RRD Op Memo No. 1, January 23, 2006 and Earth Tech/Weston Solutions 2004 Human Health Enivronmental Indicator
< 1.0 indicates a value below the method detection limit.
na: indicates "not analyzed"
G: GSI criterion depends on the pH or water hardness, or both, of the receiving surface water.
X: The GSI criterion shown in the generic cleanup criteria tables is not protective for surface water that is used as a drinking water source.

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Figures

Figures

FIGURES

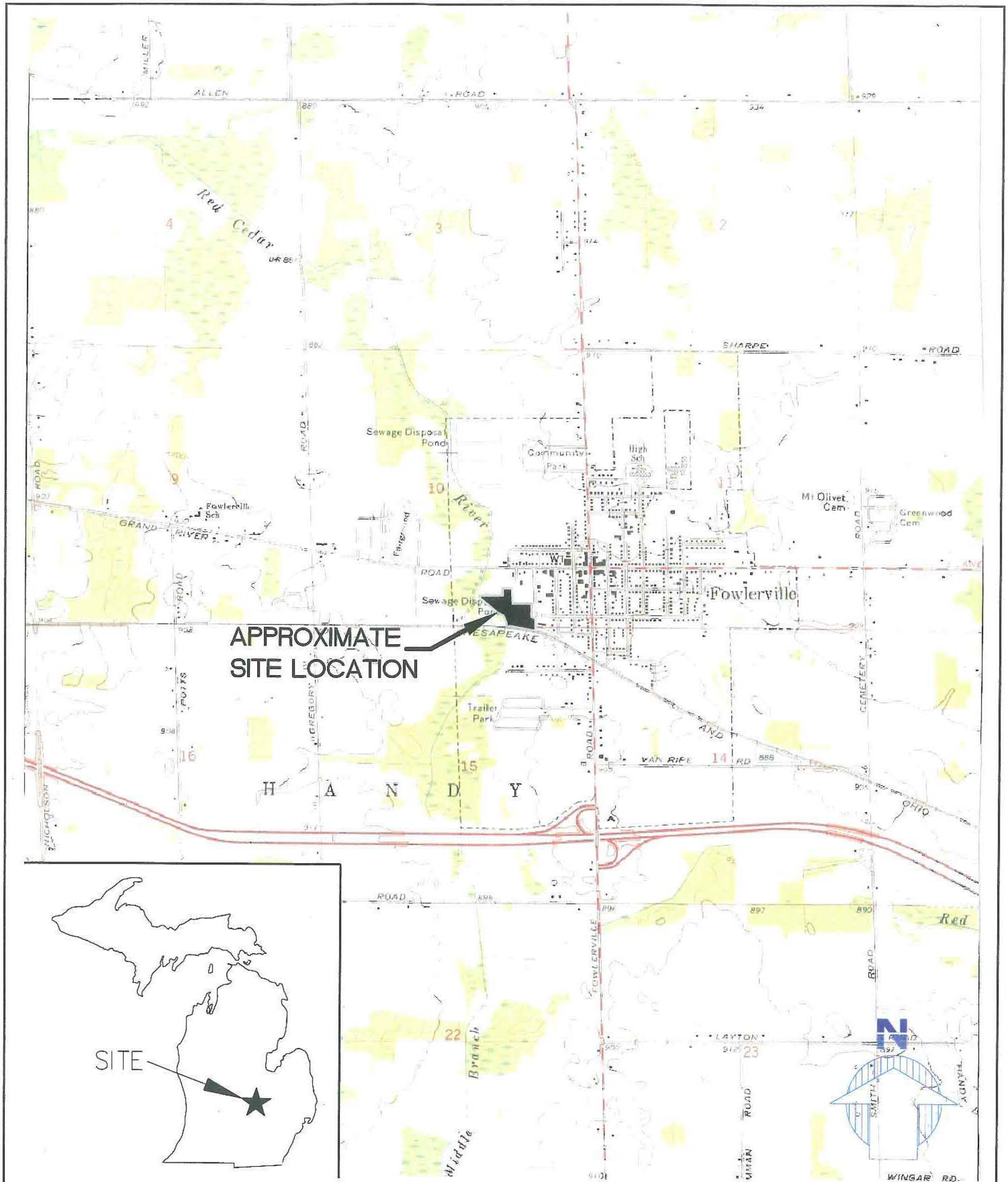

Figure 1
General Site Location
Fowlerville, Michigan

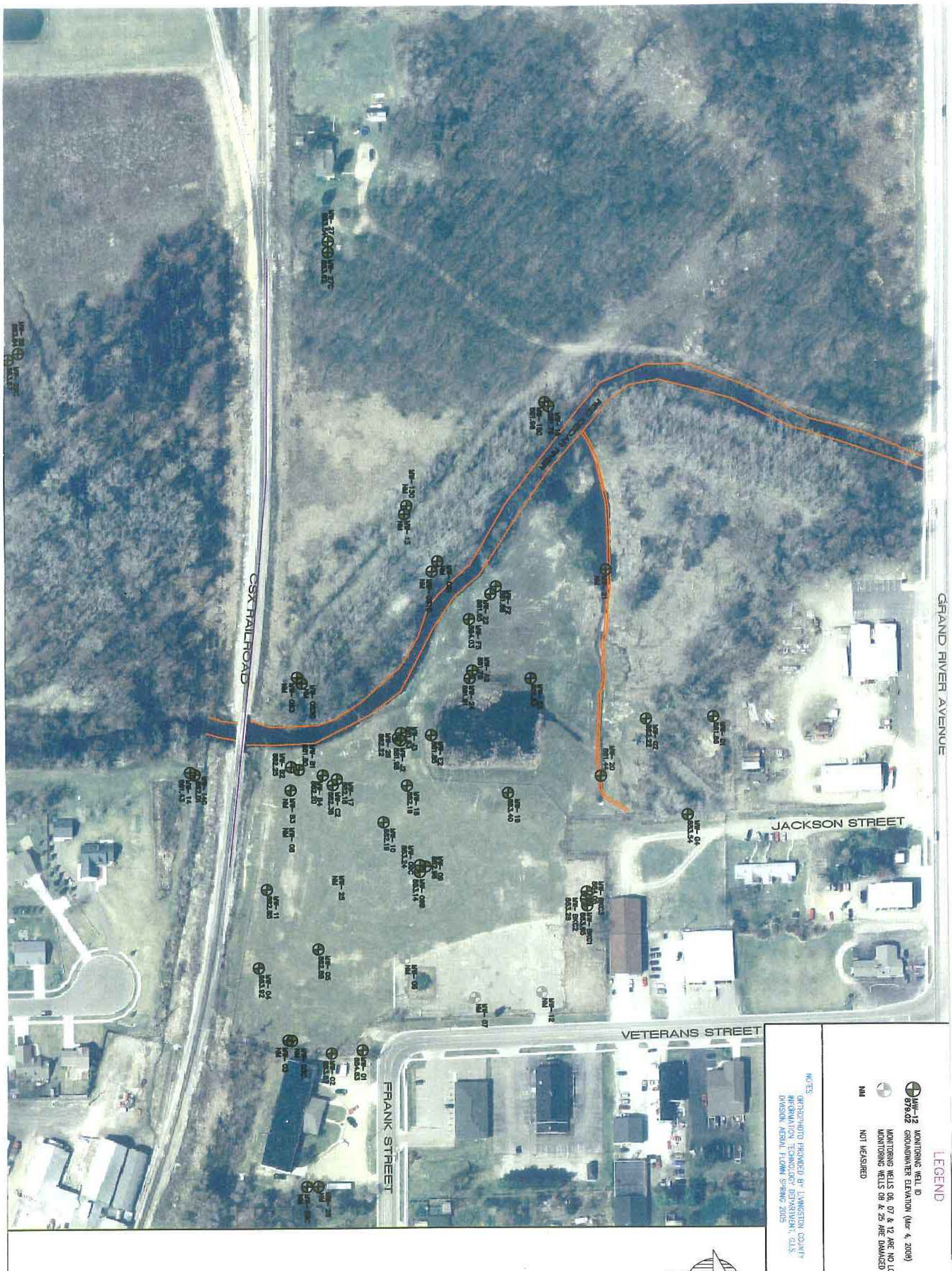

Figure 2
Monitoring Well Locations
JCI Stanley Tools Facility, Fowlersville, MI

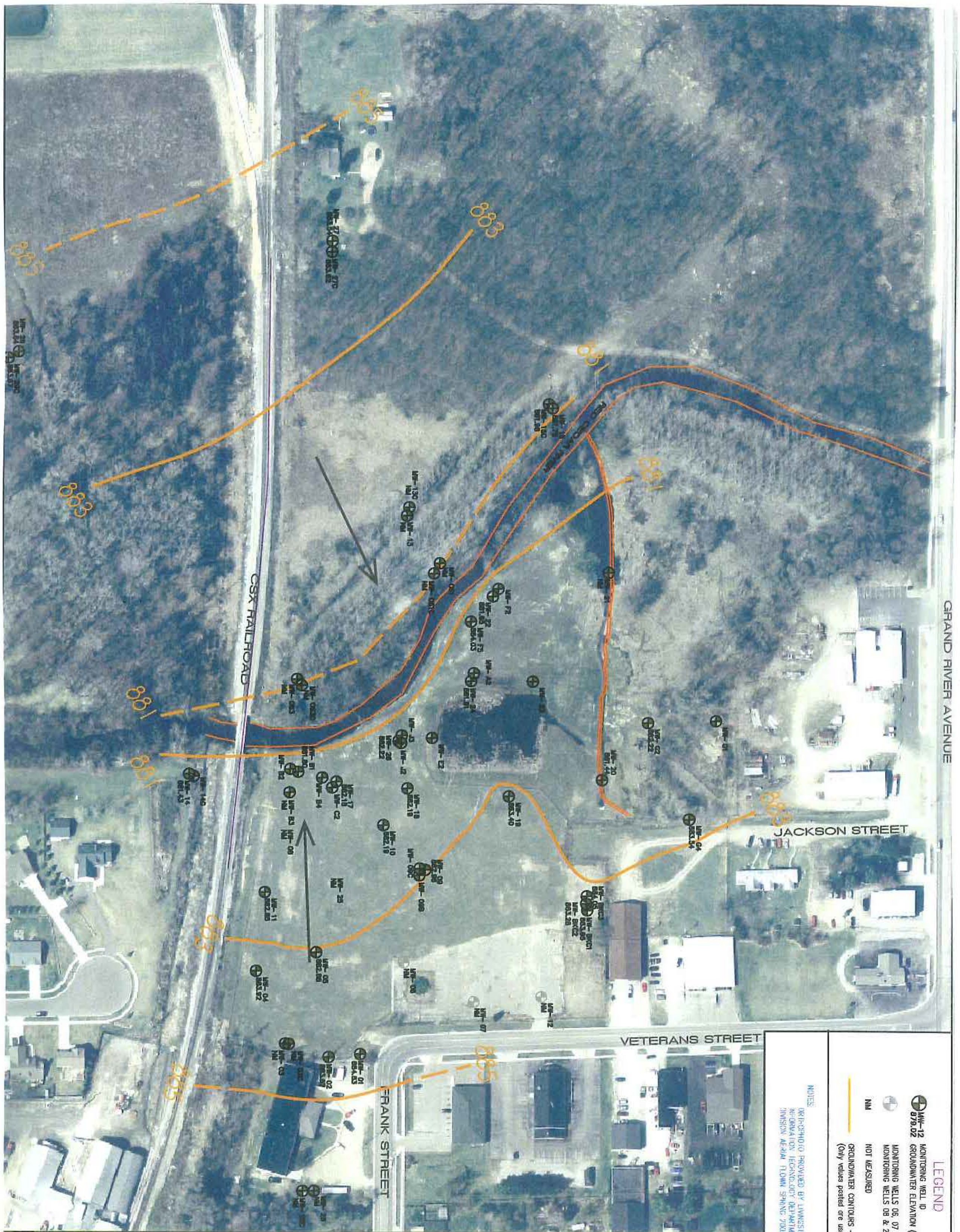

Figure 3
Shallow Groundwater Flow - March 2008
JCI Stanley Tools Facility, Fowlersville, MI

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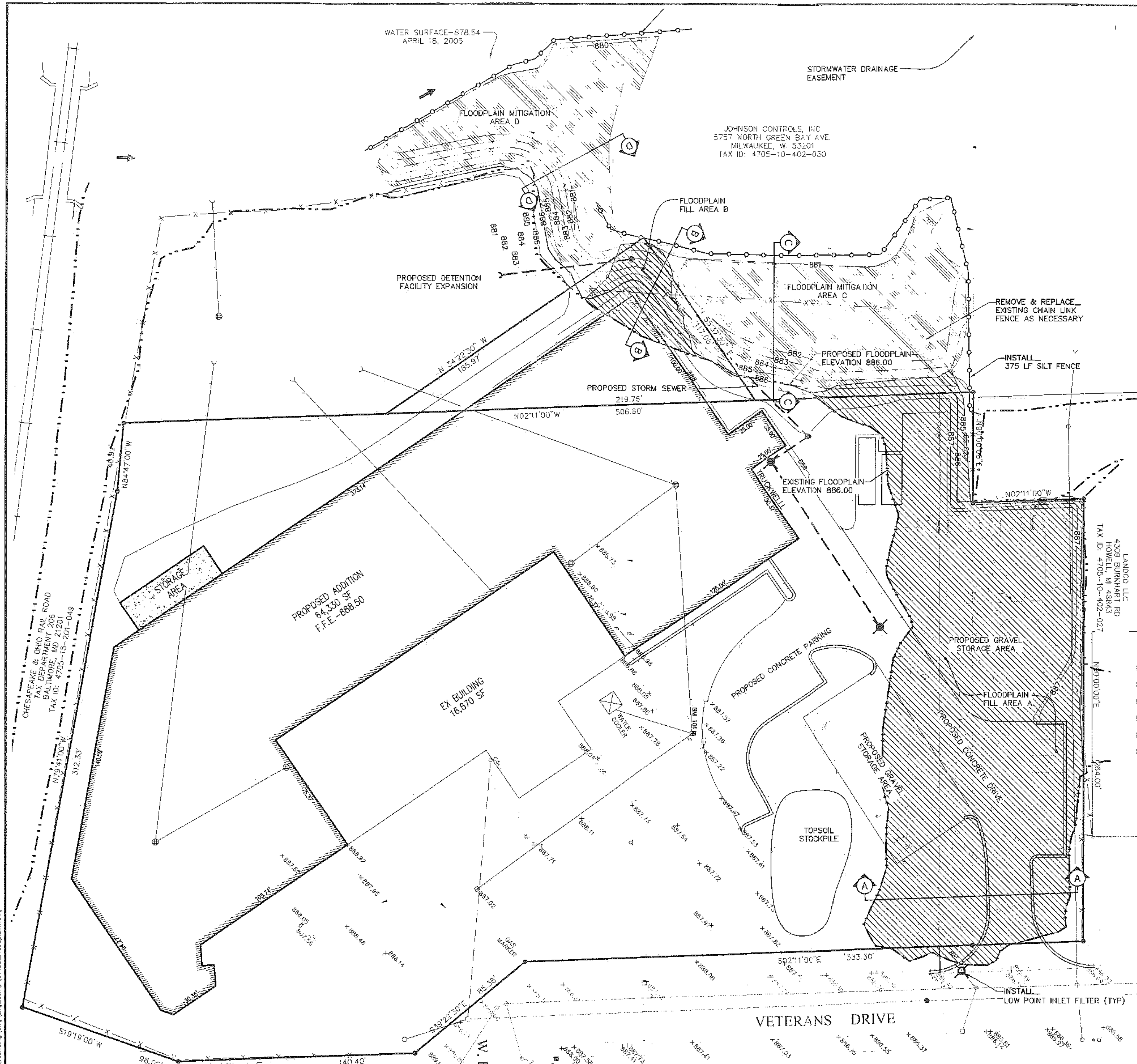
Appendix A

Appendix A

ATTACHMENT 1

PROPOSED AMERICAN COMPOUNDING EXPANSION PLANS



FLOODPLAIN FILL AREA A	FLOODPLAIN FILL AREA B	FLOODPLAIN MITIGATION AREA C	FLOODPLAIN MITIGATION AREA D
MAX FILL =2.03 FT	MAX FILL =2.47 FT	MAX CUT =2.40 FT	MAX CUT =4.57 FT
AVG. FILL =0.82 FT	AVG. FILL =0.50 FT	AVG. CUT =1.00 FT	AVG. CUT =1.64 FT
AVG. LENGTH OF FILL = 340 FT	AVG. LENGTH OF FILL = 50 FT	AVG. LENGTH OF CUT = 170 FT	AVG. LENGTH OF CUT = 130 FT
AVG. WIDTH OF FILL = 100 FT	AVG. WIDTH OF FILL = 45 FT	AVG. WIDTH OF CUT = 70 FT	AVG. WIDTH OF CUT = 85 FT
FILL AREA = 34,700 SF/0.80 AC	FILL AREA = 2,250 SF/0.05 AC	CUT AREA = 12,200 SF/0.28 AC	CUT AREA = 10,700 SF/0.25 AC
ESTIMATED FILL VOLUME = 1,054 CYDS	ESTIMATED FILL VOLUME = 42 CYDS	ESTIMATED CUT VOLUME = 453 CYDS	ESTIMATED CUT VOLUME = 649 CYDS

LOCATION MAP

HANDY TOWNSHIP
SECTION 10 (T3N - R3E)
VILLAGE OF FOWLERVILLE
LIVINGSTON COUNTY, MICHIGAN
SCALE: 1"=1000'

1" = 30'

LEGEND

	EXISTING	PROPOSED
SPOT GRADE		
CONTOUR		
SANITARY SEWER		
STORM SEWER		
STORM SEWER LABEL		
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
UTILITY POLE		
FOUND IRON ROD		
DRAINAGE ARROW		
DOMESTIC WATER WELL		
ASPHALT		
GRAVEL STORAGE		
FLOODPLAIN FILL		
FLOODPLAIN MITIGATION		

BENCHMARKS

BM 100: ARROW ON HYDRANT
ELEVATION = 889.80 (NGVD 29)
BM 101: NORTH RIM CATCH BASIN
ELEVATION = 886.52 (NGVD 29)

LEGAL DESCRIPTION

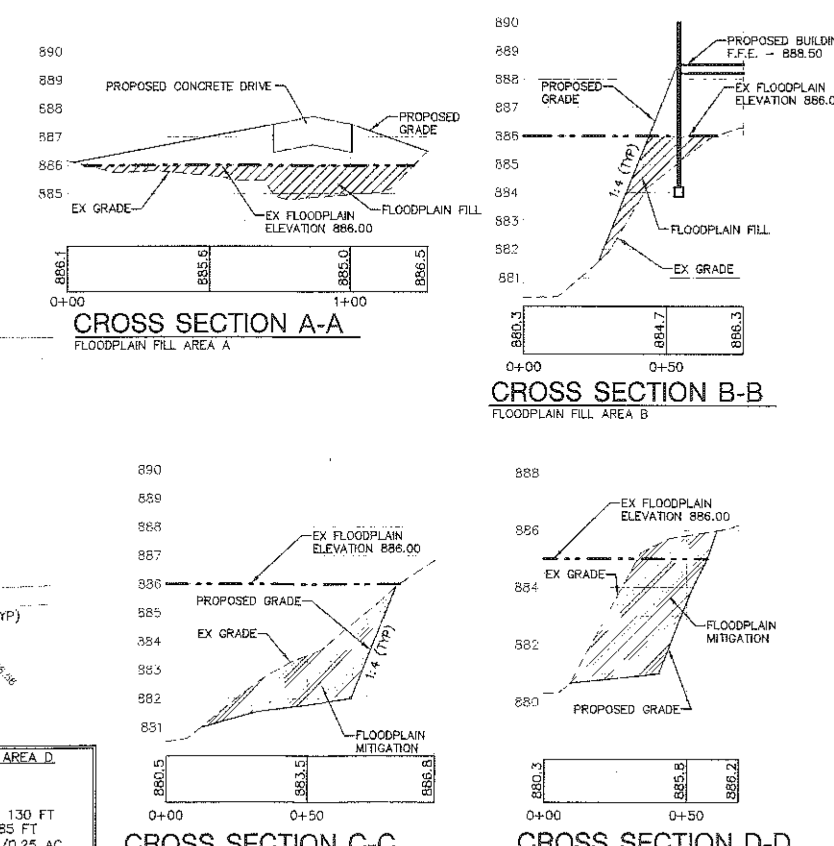
All of Lots 16, 17, 18, 19, 20, 21, 38, 39, 40, 41, 42, part of Lot 43, part of vacated Frank Street and part of vacated Jackson Street, according to the Village of Fowlerville's Council Resolution as recorded in Liber 849, Page 27, Livingston County Records. Said Lots and vacated streets being a part of "Assessor's Plat of Commercial Addition", a subdivision as recorded in Liber 5 of Plats, Pages 21-22, said plat being a re-plat of Lots 1, 2, 3 4 and 5 of "Assessor's Plat Number 4", a subdivision as recorded in Liber 4 of Plats, Page 36, Livingston County Records.

The perimeter of the above lots and vacated streets being more particularly described by Darrell Hughes, Michigan Registered Land Surveyor No. 19834, as beginning at the Northeast corner of Lot 21; proceeding thence, from said point of beginning, South 02 degrees 11 minutes 00 seconds East 333.30 feet, along the easterly line of Lots 17 thru 21, being also the westerly line of Veterans Drive, 66 feet wide (formerly Detroit Street); thence South 39 degrees 22 minutu es 30 seconds East 85.38 feet; thence South 02 degrees 11 minutes 00 seconds East 140.40 feet, along the easterly line of Lot 16; thence South 19 degrees 19 minutes 00 seconds West 98.00 feet, along the easterly line of Lot 16, being also the westerly line of the CSX Transportation Railroad Yard (so-called), 299 feet wide; thence North 79 degrees 41 minutes 00 seconds West 312.33 feet, along the southerly line of Lot 16 and part of the southerly line of Lot 43, being also the northerly line of the CSX Transportation Railroad, 99 feet wide; thence North 84 degrees 47 minutes 00 seconds West 40.92 feet, along part of the southerly line of Lot 43 and the northerly line of the said CSX Railroad; thence North 02 degrees 11 minutes 00 seconds West 506.60 feet, along, in part the easterly line of Lot 44, being also the westerly line of vacated Jackson Street, 66 feet wide; thence Due East 66.05 feet; thence North 02 degrees 11 minutes 00 seconds West 66.00 feet, along the westerly line of Lot 38; thence Due East 264.00 feet, along the northerly line of Lot 38 and Lot 21, to the point of beginning, containing 4.715 acres. Subject to all easements and restrictions of record.

Having the use of, in conjunction with others, an easement for the purpose of storm water drainage, storm water detention and/or retention, said easement being part of Lot 44 of "Assessor's Plat of Commercial Addition", a subdivision as recorded in Liber 5 of Plats, Pages 21-22, Livingston County Records, being more particularly described as beginning at the Southeast corner of Lot 44; proceeding thence, Due West 200.00 feet, along the southerly line of Lot 44; thence North 45 degrees 00 minutes 00 seconds West 58.81 feet; thence North 02 degrees 11 minutes 00 seconds West 225.68 feet; thence Due East 240.00 feet; thence South 02 degrees 11 minutes 00 seconds East 267.30 feet, along the easterly line of Lot 44, to the point of beginning.

0.25 Acre Parcel Description

Part of Lots 43 & 44 of "Assessor's Plat of Commercial Addition", as recorded in Liber 5 of Plats, Pages 21-22, said plat being a re-plat of Lots 1, 2, 3 4 and 5 of "Assessor's Plat Number 4", as recorded in Liber 4 of Plats, Page 36, Livingston County Records, being more particularly described as follows: Commencing at the Northeast corner of Lot 21 of said "Assessor's Plat of Commercial Addition"; thence along the North line of said lot 21 and 38 of said plat, N90°00'00"W, 264.00 feet; thence along the West line of said Lot 38, S02°11'00"E, 66.00 feet; thence N90°00'00"W, 66.05 feet; thence along the East line of Lot 44, S02°11'00"E, 131.06 feet to the Point of Beginning of the Parcel to be described: thence continuing along said line thence S02°11'00"E, 219.76 feet; thence N34°22'30"W, 185.97 feet; thence N55°37'30"E, 117.08 feet to the Point of Beginning. Containing 0.25 acres more or less, and subject to any easements or restrictions of record.



CROSS SECTION A-A
FLOODPLAIN FILL AREA A

CROSS SECTION B-B
FLOODPLAIN FILL AREA B

CROSS SECTION C-C
FLOODPLAIN MITIGATION AREA C

CROSS SECTION D-D
FLOODPLAIN MITIGATION AREA D

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FOWLERVILLE, MI 48836
(517) 223-4300

AMERICAN COMPOUNDING

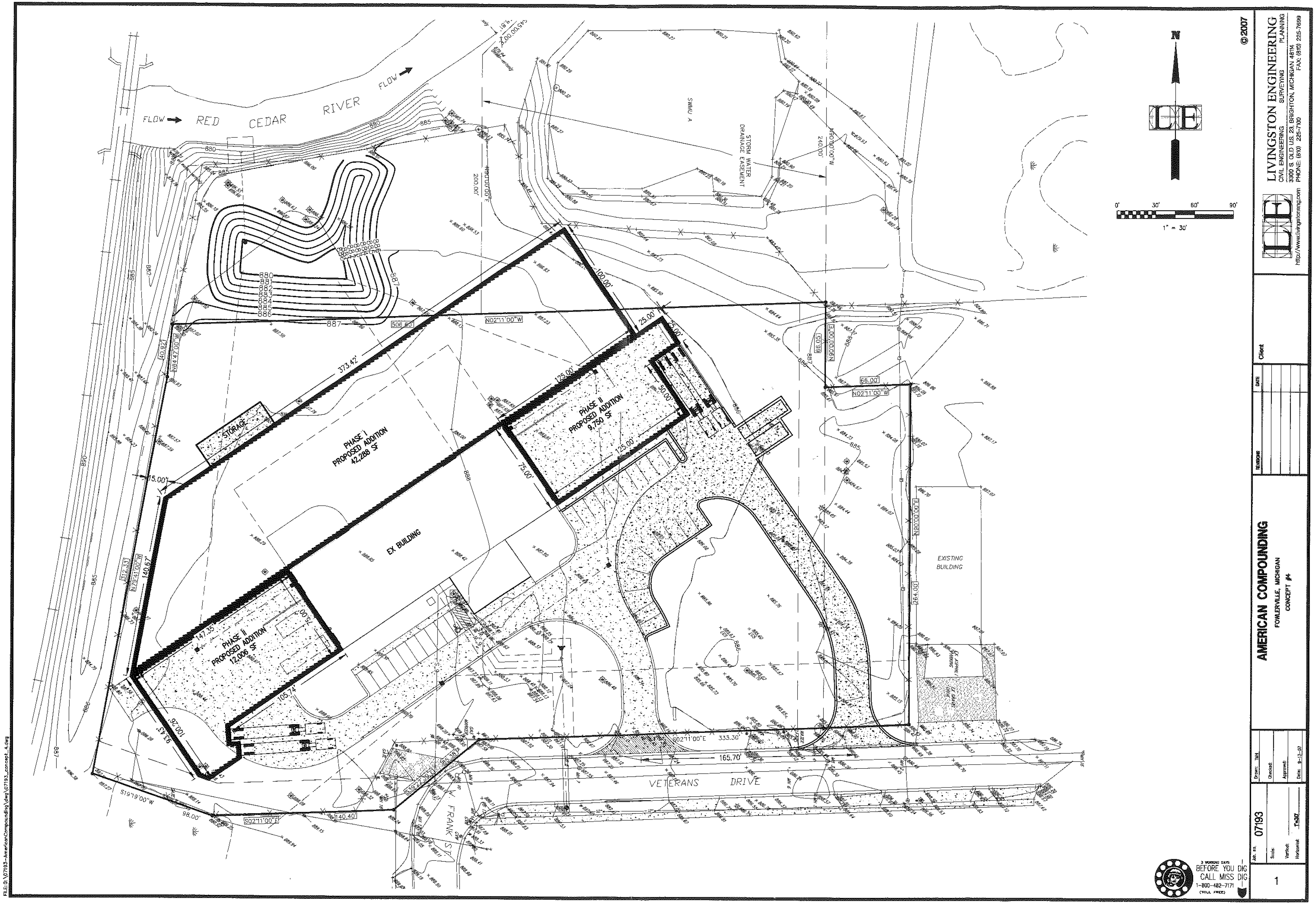
VILLAGE OF FOWLERVILLE, LIVINGSTON COUNTY, MICHIGAN
SITE PLAN
PROPOSED FLOODPLAIN FILL AND MITIGATION

REVISIONS	DATE
PER CLIENT	01-22-08

Drawn: TMB
Checked:
Approved:
Date: 1-2-08

Job no. 07193
Scale:
Vertical: 1"=3'
Horizontal: 1"=30'

F1



FLOW RED CEDAR RIVER FLOW
STORM WATER DRAINAGE EASEMENT
SWMU A
STORAGE
PHASE I PROPOSED ADDITION 42,288 SF
PHASE II PROPOSED ADDITION 9,750 SF
PHASE II PROPOSED ADDITION 12,006 SF
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W. FRANK ST.
1" = 30'
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Appendix B

ATTACHMENT 2

LABORATORY ANALYTICAL REPORT FOR 1ST SEMI-ANNUAL 2008 GROUNDWATER SAMPLES

ATTACHMENT 2

LABORATORY ANALYTICAL REPORT FOR
1ST SEMI-ANNUAL 2008 GROUNDWATER SAMPLES

TriMatrix
Laboratories, Inc.

March 20, 2008

CTI and Associates, Inc.
Attn: Mr. Raulie Casteel
12482 Emerson Drive
Brighton, MI 48116

Project: JCI Former Stanley Tool Works

Dear Mr. Raulie Casteel,

Enclosed is a copy of the laboratory report, comprised of the following work order(s), for test samples received by TriMatrix Laboratories:

Work Order	Received	Description
0803066	03/05/2008	Semi-Annual Samples
0803115	03/06/2008	Semi-Annual Samples

This report relates only to the sample(s), as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Conference (NELAC); any qualifications of results, including sample acceptance requirements, are explained in the Statement of Data Qualifications.

Estimates of analytical uncertainties for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Gary L. Wood
Project Chemist

Enclosures(s)

The total number of pages in this report, including this page, is 101.

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-J2**	Sampled:	03/04/08 14:35
Lab Sample ID:	**0803066-01**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-J2**	Sampled:	03/04/08 14:35
Lab Sample ID:	**0803066-01**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	**0.080J**	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-J2**	Sampled:	03/04/08 14:35
Lab Sample ID:	**0803066-01**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	102	*88-115*
1,2-Dichloroethane-d4	106	*81-116*
Toluene-d8	93	*87-113*
4-Bromofluorobenzene	89	*78-116*

See Statement of Data Qualifications

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-J2**	Sampled:	03/04/08 14:35
Lab Sample ID:	**0803066-01**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
***Arsenic**	**11**		5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**190**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	**0.53**		0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**0.81**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
*Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
***Zinc**	**5.7**	**J**	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-J2**	Sampled:	03/04/08 14:35
Lab Sample ID:	**0803066-01**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**11**		5.0	0.74	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Barium	**180**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	**1.2**		0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
***Chromium**	**4.8**		1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
***Copper**	**1.3**		1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Lead	**0.67**	J	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**20**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-J2**	Sampled:	03/04/08 14:35
Lab Sample ID:	**0803066-01**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
*Cyanide, Available	2	U	2	1	ug/L	1	USEPA OIA-1677	03/13/08	VAS	0802973
Cyanide, Total	**45**		5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B2**	Sampled:	03/04/08 16:10
Lab Sample ID:	**0803066-02**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B2**	Sampled:	03/04/08 16:10
Lab Sample ID:	**0803066-02**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	**0.11J**	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	**0.51J**	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B2**	Sampled:	03/04/08 16:10
Lab Sample ID:	**0803066-02**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	107	*88-115*
1,2-Dichloroethane-d4	109	*81-116*
Toluene-d8	94	*87-113*
4-Bromofluorobenzene	90	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B2**	Sampled:	03/04/08 16:10
Lab Sample ID:	**0803066-02**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**10**		5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**110**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	**5.7**		1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**0.63**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
*Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**7.3**	**J**	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B2**	Sampled:	03/04/08 16:10
Lab Sample ID:	**0803066-02**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**14**		5.0	0.74	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Barium	**140**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	**1.9**		1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**0.61**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**9.6**	**J**	10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B2**	Sampled:	03/04/08 16:10
Lab Sample ID:	**0803066-02**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	5.0	U	5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/19/08 By: JLB
Dilution Factor:	1	Date Analyzed:	03/19/08 By: JLB
QC Batch:	0803066	Analytical Batch:	8031950

Dissolved Gases in Water by RSK-175 Headspace Analysis

CAS Number	Analyte	Analytical Result	RL	MDL
74-84-0	Ethane	**0.83 J**	1.0	0.13
74-85-1	Ethylene	**1.3**	1.0	0.11

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
* 67-64-1	Acetone	**1.3JB**	5.0	1.2
71-43-2	Benzene	**0.18J**	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	**1.2**	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	**0.36J**	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	**0.26J**	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	**1.4**	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
156-59-2	cis-1,2-Dichloroethene	**30**	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	**13**	1.0	0.16
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	**0.080J**	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	**3.6**	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12
75-01-4	Vinyl Chloride	**26**	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	108	*88-115*
1,2-Dichloroethane-d4	112	*81-116*
Toluene-d8	98	*87-113*
4-Bromofluorobenzene	89	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	5.0	U	5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**81**	J	100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**0.67**	J	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**30**		10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
*Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**5.5**	J	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**1.1**	**J**	5.0	0.74	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Barium	**84**	**J**	100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**1.0**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Iron	**1100**		10	5.7	ug/L	1	USEPA-6010B	03/18/08	KLV	0802657
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Manganese	**420**		10	0.43	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Nickel	**33**		10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**18**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-17**	Sampled:	03/05/08 11:15
Lab Sample ID:	**0803066-03**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	**14**		5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Iron, Ferric	**300**		10	10	ug/L	1	SM 3500-Fe B 20th	03/19/08	HLB	0802721
Alkalinity, Total	**360000**		2000	1800	ug/L	1	USEPA-310.1	03/06/08	CAM	0802566
Chemical Oxygen Demand	**11000**		5000	2200	ug/L	1	USEPA-410.4	03/13/08	CKD	0802859
Chromium, Hexavalent-Dissolved	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802594
Chromium, Hexavalent	**1.1**	**J**	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802595
***Iron, Ferrous**	**800**		100	35	ug/L	5	SM 3500-Fe B 20th	03/07/08	HLB	0802719
Hardness as CaCO3	**410000**		2000	1000	ug/L	1	USEPA-130.2	03/11/08	CKD	0802733
Sulfate	**53000**		10000	2300	ug/L	2	USEPA-375.4	03/10/08	GEH	0802685
*Sulfide, Total	1000	U	1000	1000	ug/L	1	USEPA-9034	03/11/08	KNC	0802753
Nitrogen, Nitrate+Nitrite	**180**		50	7.2	ug/L	1	USEPA-353.2	03/06/08	HLB	0802726

*See Statement of Data Qualifications

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/19/08 By: JLB
Dilution Factor:	1	Date Analyzed:	03/19/08 By: JLB
QC Batch:	0803066	Analytical Batch:	8031950

Dissolved Gases in Water by RSK-175 Headspace Analysis

CAS Number	Analyte	Analytical Result	RL	MDL
74-84-0	Ethane	**2.3**	1.0	0.13
74-85-1	Ethylene	**1.4**	1.0	0.11

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	2	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	10U	10	2.4
71-43-2	Benzene	2.0U	2.0	0.24
108-86-1	Bromobenzene	2.0U	2.0	0.37
74-97-5	Bromochloromethane	2.0U	2.0	0.39
75-27-4	Bromodichloromethane	2.0U	2.0	0.39
75-25-2	Bromoform	2.0U	2.0	0.46
74-83-9	Bromomethane	2.0U	2.0	0.38
104-51-8	n-Butylbenzene	2.0U	2.0	0.29
135-98-8	sec-Butylbenzene	2.0U	2.0	0.25
98-06-6	tert-Butylbenzene	2.0U	2.0	0.13
75-15-0	Carbon Disulfide	10U	10	0.57
56-23-5	Carbon Tetrachloride	2.0U	2.0	0.31
108-90-7	Chlorobenzene	2.0U	2.0	0.24
75-00-3	Chloroethane	2.0U	2.0	0.40
67-66-3	Chloroform	2.0U	2.0	0.12
74-87-3	Chloromethane	2.0U	2.0	0.12
95-49-8	2-Chlorotoluene	2.0U	2.0	0.40
106-43-4	4-Chlorotoluene	2.0U	2.0	0.25
96-12-8	1,2-Dibromo-3-chloropropane	2.0U	2.0	0.58
124-48-1	Dibromochloromethane	2.0U	2.0	0.28
106-93-4	1,2-Dibromoethane	2.0U	2.0	0.44
74-95-3	Dibromomethane	2.0U	2.0	0.29
95-50-1	1,2-Dichlorobenzene	2.0U	2.0	0.13
541-73-1	1,3-Dichlorobenzene	2.0U	2.0	0.24
106-46-7	1,4-Dichlorobenzene	2.0U	2.0	0.27
75-71-8	Dichlorodifluoromethane	2.0U	2.0	0.34
75-34-3	1,1-Dichloroethane	**8.8**	2.0	0.15
107-06-2	1,2-Dichloroethane	2.0U	2.0	0.31
75-35-4	1,1-Dichloroethene	**2.0**	2.0	0.28

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	2	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
156-59-2	cis-1,2-Dichloroethene	**300**	2.0	0.33
156-60-5	trans-1,2-Dichloroethene	**46**	2.0	0.32
78-87-5	1,2-Dichloropropane	2.0U	2.0	0.21
142-28-9	1,3-Dichloropropane	2.0U	2.0	0.29
594-20-7	2,2-Dichloropropane	2.0U	2.0	0.47
563-58-6	1,1-Dichloropropene	2.0U	2.0	0.33
10061-01-5	cis-1,3-Dichloropropene	2.0U	2.0	0.29
10061-02-6	trans-1,3-Dichloropropene	2.0U	2.0	0.31
100-41-4	Ethylbenzene	2.0U	2.0	0.26
87-68-3	Hexachlorobutadiene	2.0U	2.0	0.45
591-78-6	2-Hexanone	10U	10	0.85
98-82-8	Isopropylbenzene	2.0U	2.0	0.25
99-87-6	4-Isopropyltoluene	2.0U	2.0	0.11
1634-04-4	Methyl tert-Butyl Ether	2.0U	2.0	0.19
75-09-2	Methylene Chloride	**0.28J**	2.0	0.10
78-93-3	2-Butanone (MEK)	10U	10	0.66
108-10-1	4-Methyl-2-pentanone (MIBK)	10U	10	0.76
91-20-3	Naphthalene	10U	10	0.26
103-65-1	n-Propylbenzene	2.0U	2.0	0.28
100-42-5	Styrene	2.0U	2.0	0.22
630-20-6	1,1,1,2-Tetrachloroethane	2.0U	2.0	0.30
79-34-5	1,1,2,2-Tetrachloroethane	2.0U	2.0	0.20
127-18-4	Tetrachloroethene	2.0U	2.0	0.30
108-88-3	Toluene	2.0U	2.0	0.14
87-61-6	1,2,3-Trichlorobenzene	2.0U	2.0	0.27
120-82-1	1,2,4-Trichlorobenzene	2.0U	2.0	0.32
71-55-6	1,1,1-Trichloroethane	2.0U	2.0	0.22
79-00-5	1,1,2-Trichloroethane	2.0U	2.0	0.41
79-01-6	Trichloroethene	**11**	2.0	0.34
75-69-4	Trichlorofluoromethane	2.0U	2.0	0.36
96-18-4	1,2,3-Trichloropropane	2.0U	2.0	0.14

Continued on next page

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ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	2	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
95-63-6	1,2,4-Trimethylbenzene	2.0U	2.0	0.26
108-67-8	1,3,5-Trimethylbenzene	2.0U	2.0	0.24
75-01-4	Vinyl Chloride	**56**	2.0	0.35
136777-61-2	Xylene, Meta + Para	4.0U	4.0	0.46
95-47-6	Xylene, Ortho	2.0U	2.0	0.26

Surrogates	% Recovery	Control Limits
Dibromofluoromethane	106	*88-115*
1,2-Dichloroethane-d4	104	*81-116*
Toluene-d8	95	*87-113*
4-Bromofluorobenzene	90	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**4.4**	J	5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**110**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**140**		10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**38**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**6.3**		5.0	0.74	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Barium	**120**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**0.61**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Iron	**2200**		10	5.7	ug/L	1	USEPA-6010B	03/18/08	KLV	0802657
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Manganese	**220**		10	0.43	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Nickel	**160**		10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**62**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-B1**	Sampled:	03/05/08 12:40
Lab Sample ID:	**0803066-04**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	5.0	U	5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Iron, Ferric	**100**		10	10	ug/L	1	SM 3500-Fe B 20th	03/19/08	HLB	0802721
Alkalinity, Total	**390000**		2000	1800	ug/L	1	USEPA-310.1	03/06/08	CAM	0802566
Chemical Oxygen Demand	**6900**		5000	2200	ug/L	1	USEPA-410.4	03/13/08	CKD	0802859
Chromium, Hexavalent-Dissolved	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802594
Chromium, Hexavalent	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802595
***Iron, Ferrous**	**2100**		200	70	ug/L	10	SM 3500-Fe B 20th	03/07/08	HLB	0802719
Hardness as CaCO3	**490000**		2000	1000	ug/L	1	USEPA-130.2	03/11/08	CKD	0802733
Sulfate	**100000**		25000	5800	ug/L	5	USEPA-375.4	03/10/08	GEH	0802685
*Sulfide, Total	1000	U	1000	1000	ug/L	1	USEPA-9034	03/11/08	KNC	0802753
Nitrogen, Nitrate+Nitrite	50	U	50	7.2	ug/L	1	USEPA-353.2	03/06/08	HLB	0802726

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-22**	Sampled:	03/05/08 11:30
Lab Sample ID:	**0803066-05**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
* 67-64-1	Acetone	**4.6JB**	5.0	1.2
71-43-2	Benzene	**0.38J**	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	**3.5**	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-22**	Sampled:	03/05/08 11:30
Lab Sample ID:	**0803066-05**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-22**	Sampled:	03/05/08 11:30
Lab Sample ID:	**0803066-05**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	% Recovery	Control Limits
Dibromofluoromethane	109	*88-115*
1,2-Dichloroethane-d4	112	*81-116*
Toluene-d8	93	*87-113*
4-Bromofluorobenzene	90	*78-116*

*See Statement of Data Qualifications

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client: **CTI and Associates, Inc.**
Project: JCI Former Stanley Tool Works
Client Sample ID: **MW-22**
Lab Sample ID: **0803066-05**
Matrix: Water

Work Order: **0803066**
Description: Semi-Annual Samples
Sampled: 03/05/08 11:30
Sampled By: P. Riley
Received: 03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**64**		5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**360**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**0.62**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**14**		10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
*Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**4.9**	**J**	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-22**	Sampled:	03/05/08 11:30
Lab Sample ID:	**0803066-05**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**86**		5.0	0.74	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Barium	**410**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	**0.32**	**J**	1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**1.2**		1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
***Nickel**	**12**		10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**23**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-22**	Sampled:	03/05/08 11:30
Lab Sample ID:	**0803066-05**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	**2.1**	J	5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Chromium, Hexavalent-Dissol	**0.7**	J	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802594
Chromium, Hexavalent	**1.2**	J	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802595

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-A2**	Sampled:	03/05/08 14:40
Lab Sample ID:	**0803066-06**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-A2**	Sampled:	03/05/08 14:40
Lab Sample ID:	**0803066-06**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-A2**	Sampled:	03/05/08 14:40
Lab Sample ID:	**0803066-06**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	106	*88-115*
1,2-Dichloroethane-d4	109	*81-116*
Toluene-d8	95	*87-113*
4-Bromofluorobenzene	90	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-A2**	Sampled:	03/05/08 14:40
Lab Sample ID:	**0803066-06**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**4.8**	**J**	5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**140**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**1.3**		1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**4.0**	**J**	10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**9.7**	**J**	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-A2**	Sampled:	03/05/08 14:40
Lab Sample ID:	**0803066-06**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**6.7**		5.0	0.74	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Barium	**150**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	**1.7**		1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**3.6**		1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Nickel	**7.9**	**J**	10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**17**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-A2**	Sampled:	03/05/08 14:40
Lab Sample ID:	**0803066-06**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	5.0	U	5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Chromium, Hexavalent-Dissolved	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802594
Chromium, Hexavalent	**4.7**	**J**	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802595

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-26**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803066-07**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	**0.45J**	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	**15**	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-26**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803066-07**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-26**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803066-07**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	**7.4**	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	106	*88-115*
1,2-Dichloroethane-d4	109	*81-116*
Toluene-d8	88	*87-113*
4-Bromofluorobenzene	87	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-26**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803066-07**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**2.7**	J	5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**110**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**1.0**		1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**12**		10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
*Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**5.0**	J	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-26**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803066-07**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**4.6**	J	5.0	0.74	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Barium	**120**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**0.49**	J	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
***Nickel**	**10**		10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**12**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-26**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803066-07**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	**11**		5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Chromium, Hexavalent-Dissolved	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802594
Chromium, Hexavalent	**1.7**	**J**	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802595

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**DUP-1**	Sampled:	03/05/08 15:00
Lab Sample ID:	**0803066-08**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	**0.53J**	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	**16**	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**DUP-1**	Sampled:	03/05/08 15:00
Lab Sample ID:	**0803066-08**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**DUP-1**	Sampled:	03/05/08 15:00
Lab Sample ID:	**0803066-08**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	**8.3**	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	110	*88-115*
1,2-Dichloroethane-d4	112	*81-116*
Toluene-d8	95	*87-113*
4-Bromofluorobenzene	92	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**DUP-1**	Sampled:	03/05/08 15:00
Lab Sample ID:	**0803066-08**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**2.8**	J	5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**120**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**12**		10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
*Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**4.5**	J	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**DUP-1**	Sampled:	03/05/08 15:00
Lab Sample ID:	**0803066-08**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**4.5**	J	5.0	0.74	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Barium	**120**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**0.52**	J	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	**0.051**	J	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Nickel	**13**		10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**18**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**DUP-1**	Sampled:	03/05/08 15:00
Lab Sample ID:	**0803066-08**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	**11**		5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Chromium, Hexavalent-Dissolved	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802594
Chromium, Hexavalent	**0.9**	J	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/06/08	INR	0802595

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**FB-1**	Sampled:	03/05/08 15:15
Lab Sample ID:	**0803066-09**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
* 67-64-1	Acetone	**3.9JB**	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**FB-1**	Sampled:	03/05/08 15:15
Lab Sample ID:	**0803066-09**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	**0.15J**	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803066**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**FB-1**	Sampled:	03/05/08 15:15
Lab Sample ID:	**0803066-09**	Sampled By:	P. Riley
Matrix:	Water	Received:	03/05/08 17:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	% Recovery	Control Limits
Dibromofluoromethane	100	*88-115*
1,2-Dichloroethane-d4	99	*81-116*
Toluene-d8	93	*87-113*
4-Bromofluorobenzene	90	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-2**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803115-01**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	50	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	250U	250	60
71-43-2	Benzene	50U	50	5.9
108-86-1	Bromobenzene	50U	50	9.2
74-97-5	Bromochloromethane	50U	50	9.8
75-27-4	Bromodichloromethane	50U	50	9.7
75-25-2	Bromoform	50U	50	12
74-83-9	Bromomethane	50U	50	9.6
104-51-8	n-Butylbenzene	50U	50	7.2
135-98-8	sec-Butylbenzene	50U	50	6.2
98-06-6	tert-Butylbenzene	50U	50	3.3
75-15-0	Carbon Disulfide	250U	250	14
56-23-5	Carbon Tetrachloride	50U	50	7.6
108-90-7	Chlorobenzene	50U	50	6.0
75-00-3	Chloroethane	50U	50	10
67-66-3	Chloroform	50U	50	3.1
74-87-3	Chloromethane	50U	50	3.0
95-49-8	2-Chlorotoluene	50U	50	10
106-43-4	4-Chlorotoluene	50U	50	6.4
96-12-8	1,2-Dibromo-3-chloropropane	50U	50	14
124-48-1	Dibromochloromethane	50U	50	6.9
106-93-4	1,2-Dibromoethane	50U	50	11
74-95-3	Dibromomethane	50U	50	7.2
95-50-1	1,2-Dichlorobenzene	50U	50	3.3
541-73-1	1,3-Dichlorobenzene	50U	50	6.0
106-46-7	1,4-Dichlorobenzene	50U	50	6.6
75-71-8	Dichlorodifluoromethane	50U	50	8.4
75-34-3	1,1-Dichloroethane	50U	50	3.8
107-06-2	1,2-Dichloroethane	50U	50	7.6
75-35-4	1,1-Dichloroethene	50U	50	7.0
156-59-2	cis-1,2-Dichloroethene	**600**	50	8.3
156-60-5	trans-1,2-Dichloroethene	**23J**	50	7.9

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-2**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803115-01**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	50	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	50U	50	5.2
142-28-9	1,3-Dichloropropane	50U	50	7.2
594-20-7	2,2-Dichloropropane	50U	50	12
563-58-6	1,1-Dichloropropene	50U	50	8.3
10061-01-5	cis-1,3-Dichloropropene	50U	50	7.2
10061-02-6	trans-1,3-Dichloropropene	50U	50	7.8
100-41-4	Ethylbenzene	50U	50	6.6
87-68-3	Hexachlorobutadiene	50U	50	11
591-78-6	2-Hexanone	250U	250	21
98-82-8	Isopropylbenzene	50U	50	6.2
99-87-6	4-Isopropyltoluene	50U	50	2.9
1634-04-4	Methyl tert-Butyl Ether	50U	50	4.8
75-09-2	Methylene Chloride	**8.5J**	50	2.5
78-93-3	2-Butanone (MEK)	250U	250	16
108-10-1	4-Methyl-2-pentanone (MIBK)	250U	250	19
91-20-3	Naphthalene	250U	250	6.6
103-65-1	n-Propylbenzene	50U	50	6.9
100-42-5	Styrene	50U	50	5.4
630-20-6	1,1,1,2-Tetrachloroethane	50U	50	7.4
79-34-5	1,1,2,2-Tetrachloroethane	50U	50	5.0
127-18-4	Tetrachloroethene	50U	50	7.4
108-88-3	Toluene	50U	50	3.6
87-61-6	1,2,3-Trichlorobenzene	50U	50	6.6
120-82-1	1,2,4-Trichlorobenzene	50U	50	8.1
71-55-6	1,1,1-Trichloroethane	50U	50	5.5
79-00-5	1,1,2-Trichloroethane	50U	50	10
79-01-6	Trichloroethene	**3600**	50	8.6
75-69-4	Trichlorofluoromethane	50U	50	9.0
96-18-4	1,2,3-Trichloropropane	50U	50	3.6
95-63-6	1,2,4-Trimethylbenzene	50U	50	6.6
108-67-8	1,3,5-Trimethylbenzene	50U	50	6.0

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-2**	Sampled:	03/05/08 14:45
Lab Sample ID:	**0803115-01**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	50	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	50 U	50	8.7
136777-61-2	Xylene, Meta + Para	100 U	100	12
95-47-6	Xylene, Ortho	50 U	50	6.4

Surrogates	% Recovery	Control Limits
Dibromofluoromethane	107	*88-115*
1,2-Dichloroethane-d4	112	*81-116*
Toluene-d8	87	*87-113*
4-Bromofluorobenzene	88	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-11**	Sampled:	03/05/08 17:00
Lab Sample ID:	**0803115-02**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	**0.26J**	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	**0.77J**	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-11**	Sampled:	03/05/08 17:00
Lab Sample ID:	**0803115-02**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	**0.11J**	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	**3.0**	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-11**	Sampled:	03/05/08 17:00
Lab Sample ID:	**0803115-02**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	***% Recovery***	***Control Limits***
Dibromofluoromethane	108	*88-115*
1,2-Dichloroethane-d4	113	*81-116*
Toluene-d8	90	*87-113*
4-Bromofluorobenzene	90	*78-116*

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-11**	Sampled:	03/05/08 17:00
Lab Sample ID:	**0803115-02**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	5.0	U	5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**57**	**J**	100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	**5.0**		1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**4.3**		1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**180**		10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-11**	Sampled:	03/05/08 17:00
Lab Sample ID:	**0803115-02**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	5.0	U	5.0	0.74	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Barium	**65**	**J**	100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	**0.066**	**J**	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	**4.8**		1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	**4.8**		1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
***Zinc**	**220**	**B**	10	0.84	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-11**	Sampled:	03/05/08 17:00
Lab Sample ID:	**0803115-02**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	5.0	U	5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-24**	Sampled:	03/06/08 14:40
Lab Sample ID:	**0803115-03**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

*Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	**4.6**	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	1.0U	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	1.0U	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	1.0U	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-24**	Sampled:	03/06/08 14:40
Lab Sample ID:	**0803115-03**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

*Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	**0.60J**	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

Continued on next page

*See Statement of Data Qualifications

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-24**	Sampled:	03/06/08 14:40
Lab Sample ID:	**0803115-03**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/11/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/11/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031246

*Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	1.0U	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	*% Recovery*	*Control Limits*
Dibromofluoromethane	114	*88-115*
1,2-Dichloroethane-d4	**117**	*81-116*
Toluene-d8	91	*87-113*
4-Bromofluorobenzene	91	*78-116*

*See Statement of Data Qualifications

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ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-24**	Sampled:	03/06/08 14:40
Lab Sample ID:	**0803115-03**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Dissolved Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**30**		5.0	0.74	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Barium	**180**		100	0.52	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Copper	**0.65**	**J**	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/18/08	DSC	0802910
Nickel	**2.2**	**J**	10	0.28	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/18/08	DSC	0802794
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794
Zinc	**5.7**	**J**	10	0.84	ug/L	1	USEPA-6020A	03/17/08	DWJ	0802794

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-24**	Sampled:	03/06/08 14:40
Lab Sample ID:	**0803115-03**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Arsenic	**36**		5.0	0.74	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Barium	**200**		100	0.52	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Cadmium	0.20	U	0.20	0.062	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Chromium	1.0	U	1.0	0.31	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Copper	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862
Lead	1.0	U	1.0	0.33	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Mercury	0.20	U	0.20	0.046	ug/L	1	USEPA-7470A	03/12/08	JMF	0802738
Nickel	**3.9**	J	10	0.28	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Selenium	1.0	U	1.0	0.92	ug/L	1	USEPA-6020A	03/13/08	DSC	0802654
Silver	0.20	U	0.20	0.12	ug/L	1	USEPA-6020A	03/12/08	DWJ	0802654
Zinc	**6.5**	J	10	0.84	ug/L	1	USEPA-6020A	03/17/08	MSM	0802862

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-24**	Sampled:	03/06/08 14:40
Lab Sample ID:	**0803115-03**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Available	2	U	2	1	ug/L	1	USEPA OIA-1677	03/13/08	VAS	0802973
Cyanide, Total	**48**		5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652
Chromium, Hexavalent-Dissolved	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/07/08	INR	0802594
Chromium, Hexavalent	5.0	U	5.0	0.6	ug/L	1	SM 3500-Cr B 20th	03/07/08	INR	0802595

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-14**	Sampled:	03/06/08 12:45
Lab Sample ID:	**0803115-04**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

*Volatile Organic Compounds by EPA Method 8260B

CAS Number	Analyte	Analytical Result	RL	MDL
67-64-1	Acetone	5.0U	5.0	1.2
* 71-43-2	Benzene	1.0U	1.0	0.12
108-86-1	Bromobenzene	1.0U	1.0	0.18
74-97-5	Bromochloromethane	1.0U	1.0	0.20
75-27-4	Bromodichloromethane	1.0U	1.0	0.19
75-25-2	Bromoform	1.0U	1.0	0.23
74-83-9	Bromomethane	1.0U	1.0	0.19
104-51-8	n-Butylbenzene	1.0U	1.0	0.14
135-98-8	sec-Butylbenzene	1.0U	1.0	0.12
* 98-06-6	tert-Butylbenzene	1.0U	1.0	0.065
75-15-0	Carbon Disulfide	5.0U	5.0	0.28
* 56-23-5	Carbon Tetrachloride	1.0U	1.0	0.15
108-90-7	Chlorobenzene	1.0U	1.0	0.12
75-00-3	Chloroethane	1.0U	1.0	0.20
67-66-3	Chloroform	1.0U	1.0	0.061
74-87-3	Chloromethane	1.0U	1.0	0.060
95-49-8	2-Chlorotoluene	1.0U	1.0	0.20
106-43-4	4-Chlorotoluene	1.0U	1.0	0.13
96-12-8	1,2-Dibromo-3-chloropropane	1.0U	1.0	0.29
124-48-1	Dibromochloromethane	1.0U	1.0	0.14
106-93-4	1,2-Dibromoethane	1.0U	1.0	0.22
74-95-3	Dibromomethane	1.0U	1.0	0.14
95-50-1	1,2-Dichlorobenzene	1.0U	1.0	0.065
541-73-1	1,3-Dichlorobenzene	1.0U	1.0	0.12
106-46-7	1,4-Dichlorobenzene	1.0U	1.0	0.13
75-71-8	Dichlorodifluoromethane	1.0U	1.0	0.17
75-34-3	1,1-Dichloroethane	**2.4**	1.0	0.076
107-06-2	1,2-Dichloroethane	1.0U	1.0	0.15
75-35-4	1,1-Dichloroethene	1.0U	1.0	0.14
156-59-2	cis-1,2-Dichloroethene	**23**	1.0	0.17
156-60-5	trans-1,2-Dichloroethene	**2.5**	1.0	0.16

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-14**	Sampled:	03/06/08 12:45
Lab Sample ID:	**0803115-04**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

*Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
78-87-5	1,2-Dichloropropane	1.0U	1.0	0.10
142-28-9	1,3-Dichloropropane	1.0U	1.0	0.14
594-20-7	2,2-Dichloropropane	1.0U	1.0	0.24
563-58-6	1,1-Dichloropropene	1.0U	1.0	0.17
10061-01-5	cis-1,3-Dichloropropene	1.0U	1.0	0.14
10061-02-6	trans-1,3-Dichloropropene	1.0U	1.0	0.16
100-41-4	Ethylbenzene	1.0U	1.0	0.13
87-68-3	Hexachlorobutadiene	1.0U	1.0	0.23
591-78-6	2-Hexanone	5.0U	5.0	0.42
98-82-8	Isopropylbenzene	1.0U	1.0	0.12
99-87-6	4-Isopropyltoluene	1.0U	1.0	0.057
1634-04-4	Methyl tert-Butyl Ether	1.0U	1.0	0.096
75-09-2	Methylene Chloride	1.0U	1.0	0.051
78-93-3	2-Butanone (MEK)	5.0U	5.0	0.33
108-10-1	4-Methyl-2-pentanone (MIBK)	5.0U	5.0	0.38
91-20-3	Naphthalene	5.0U	5.0	0.13
103-65-1	n-Propylbenzene	1.0U	1.0	0.14
100-42-5	Styrene	1.0U	1.0	0.11
630-20-6	1,1,1,2-Tetrachloroethane	1.0U	1.0	0.15
79-34-5	1,1,2,2-Tetrachloroethane	1.0U	1.0	0.10
127-18-4	Tetrachloroethene	1.0U	1.0	0.15
108-88-3	Toluene	1.0U	1.0	0.072
87-61-6	1,2,3-Trichlorobenzene	1.0U	1.0	0.13
120-82-1	1,2,4-Trichlorobenzene	1.0U	1.0	0.16
* 71-55-6	1,1,1-Trichloroethane	1.0U	1.0	0.11
79-00-5	1,1,2-Trichloroethane	1.0U	1.0	0.21
79-01-6	Trichloroethene	1.0U	1.0	0.17
75-69-4	Trichlorofluoromethane	1.0U	1.0	0.18
96-18-4	1,2,3-Trichloropropane	1.0U	1.0	0.071
95-63-6	1,2,4-Trimethylbenzene	1.0U	1.0	0.13
* 108-67-8	1,3,5-Trimethylbenzene	1.0U	1.0	0.12

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TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-14**	Sampled:	03/06/08 12:45
Lab Sample ID:	**0803115-04**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30
Unit:	ug/L	Prepared:	03/10/08 By: JDM
Dilution Factor:	1	Date Analyzed:	03/10/08 By: JDM
QC Batch:	0802831	Analytical Batch:	8031245

*Volatile Organic Compounds by EPA Method 8260B (Continued)

CAS Number	Analyte	Analytical Result	RL	MDL
75-01-4	Vinyl Chloride	**4.4**	1.0	0.17
136777-61-2	Xylene, Meta + Para	2.0U	2.0	0.23
* 95-47-6	Xylene, Ortho	1.0U	1.0	0.13

Surrogates	*% Recovery*	*Control Limits*
Dibromofluoromethane	114	*88-115*
1,2-Dichloroethane-d4	116	*81-116*
Toluene-d8	92	*87-113*
4-Bromofluorobenzene	85	*78-116*

*See Statement of Data Qualifications

TriMatrix Laboratories, Inc.

ANALYTICAL REPORT

Client:	**CTI and Associates, Inc.**	Work Order:	**0803115**
Project:	JCI Former Stanley Tool Works	Description:	Semi-Annual Samples
Client Sample ID:	**MW-14**	Sampled:	03/06/08 12:45
Lab Sample ID:	**0803115-04**	Sampled By:	P. Riley/E.Hammerly
Matrix:	Water	Received:	03/06/08 18:30

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result		RL	MDL	Unit	Dilution Factor	Method	Date Analyzed	By	QC Batch
Cyanide, Total	5.0	U	5.0	1.9	ug/L	1	USEPA-9014	03/10/08	VAS	0802652

TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT

Dissolved Gases in Water by RSK-175 Headspace Analysis

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 0803066 Direct Injection/RSK-175									
Method Blank Unit: ug/L						Analyzed:		03/19/2008	By: JLB
						Analytical Batch:		8031950	
Ethane			1.0 U					1.0	0.13
Ethylene			1.0 U					1.0	0.11
Laboratory Control Sample Unit: ug/L						Analyzed:		03/19/2008	By: JLB
						Analytical Batch:		8031950	
Ethane		17.7	**16.6**	94	76-125			1.0	0.13
Ethylene		16.5	**15.5**	94	79-121			1.0	0.11
Duplicate 0803066-03 MW-17 Unit: ug/L						Analyzed:		03/19/2008	By: JLB
						Analytical Batch:		8031950	
Ethane	0.830 J		**0.870**			5	20	1.0	0.13
Ethylene	1.27		**1.32**			4	20	1.0	0.11

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B

QC Batch: 0802831 5030B Aqueous Purge & Trap/USEPA-8260B

Method Blank
Unit: ug/L

Analyzed: 03/10/2008 By: JDM
Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Acetone			5.0U					5.0	1.2
Benzene			1.0U					1.0	0.12
Bromobenzene			1.0U					1.0	0.18
Bromochloromethane			1.0U					1.0	0.20
Bromodichloromethane			1.0U					1.0	0.19
Bromoform			1.0U					1.0	0.23
Bromomethane			1.0U					1.0	0.19
n-Butylbenzene			1.0U					1.0	0.14
sec-Butylbenzene			1.0U					1.0	0.12
tert-Butylbenzene			1.0U					1.0	0.065
Carbon Disulfide			5.0U					5.0	0.28
Carbon Tetrachloride			1.0U					1.0	0.15
Chlorobenzene			1.0U					1.0	0.12
Chloroethane			1.0U					1.0	0.20
Chloroform			1.0U					1.0	0.061
Chloromethane			1.0U					1.0	0.060
2-Chlorotoluene			1.0U					1.0	0.20
4-Chlorotoluene			1.0U					1.0	0.13
1,2-Dibromo-3-chloropropane			1.0U					1.0	0.29
Dibromochloromethane			1.0U					1.0	0.14
1,2-Dibromoethane			1.0U					1.0	0.22
Dibromomethane			1.0U					1.0	0.14
1,2-Dichlorobenzene			1.0U					1.0	0.065
1,3-Dichlorobenzene			1.0U					1.0	0.12
1,4-Dichlorobenzene			1.0U					1.0	0.13
Dichlorodifluoromethane			1.0U					1.0	0.17
1,1-Dichloroethane			1.0U					1.0	0.076
1,2-Dichloroethane			1.0U					1.0	0.15
1,1-Dichloroethene			1.0U					1.0	0.14
cis-1,2-Dichloroethene			1.0U					1.0	0.17
trans-1,2-Dichloroethene			1.0U					1.0	0.16
1,2-Dichloropropane			1.0U					1.0	0.10
1,3-Dichloropropane			1.0U					1.0	0.14
2,2-Dichloropropane			1.0U					1.0	0.24
1,1-Dichloropropene			1.0U					1.0	0.17
cis-1,3-Dichloropropene			1.0U					1.0	0.14

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B									
Method Blank (Continued) Unit: ug/L						Analyzed: Analytical Batch:		03/10/2008 8031245	By: JDM
trans-1,3-Dichloropropene			1.0U					1.0	0.16
Ethylbenzene			1.0U					1.0	0.13
Hexachlorobutadiene			1.0U					1.0	0.23
2-Hexanone			5.0U					5.0	0.42
Isopropylbenzene			1.0U					1.0	0.12
4-Isopropyltoluene			1.0U					1.0	0.057
Methyl tert-Butyl Ether			1.0U					1.0	0.096
Methylene Chloride			1.0U					1.0	0.051
2-Butanone (MEK)			5.0U					5.0	0.33
4-Methyl-2-pentanone (MIBK)			5.0U					5.0	0.38
Naphthalene			**3.02J**					5.0	0.13
n-Propylbenzene			1.0U					1.0	0.14
Styrene			1.0U					1.0	0.11
1,1,1,2-Tetrachloroethane			1.0U					1.0	0.15
1,1,2,2-Tetrachloroethane			1.0U					1.0	0.10
Tetrachloroethene			1.0U					1.0	0.15
Toluene			1.0U					1.0	0.072
1,2,3-Trichlorobenzene			1.0U					1.0	0.13
1,2,4-Trichlorobenzene			1.0U					1.0	0.16
1,1,1-Trichloroethane			1.0U					1.0	0.11
1,1,2-Trichloroethane			1.0U					1.0	0.21
Trichloroethene			1.0U					1.0	0.17
Trichlorofluoromethane			1.0U					1.0	0.18
1,2,3-Trichloropropane			1.0U					1.0	0.071
1,2,4-Trimethylbenzene			1.0U					1.0	0.13
1,3,5-Trimethylbenzene			1.0U					1.0	0.12
Vinyl Chloride			1.0U					1.0	0.17
Xylene, Meta + Para			2.0U					2.0	0.23
Xylene, Ortho			1.0U					1.0	0.13
Surrogates									
Dibromofluoromethane				106	*88-115*				
1,2-Dichloroethane-d4				103	*81-116*				
Toluene-d8				92	*87-113*				
4-Bromofluorobenzene				88	*78-116*				
Method Blank Unit: ug/L						Analyzed: Analytical Batch:		03/11/2008 8031246	By: JDM
Acetone			**5.15**					5.0	1.2

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Method Blank (Continued) Analyzed: 03/11/2008 By: JDM

Unit: ug/L Analytical Batch: 8031246

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Benzene			1.0U					1.0	0.12
Bromobenzene			1.0U					1.0	0.18
Bromochloromethane			1.0U					1.0	0.20
Bromodichloromethane			1.0U					1.0	0.19
Bromoform			1.0U					1.0	0.23
Bromomethane			1.0U					1.0	0.19
n-Butylbenzene			1.0U					1.0	0.14
sec-Butylbenzene			1.0U					1.0	0.12
tert-Butylbenzene			1.0U					1.0	0.065
Carbon Disulfide			5.0U					5.0	0.28
Carbon Tetrachloride			1.0U					1.0	0.15
Chlorobenzene			1.0U					1.0	0.12
Chloroethane			1.0U					1.0	0.20
Chloroform			1.0U					1.0	0.061
Chloromethane			1.0U					1.0	0.060
[illegible]-Chlorotoluene			1.0U					1.0	0.20
[illegible]-Chlorotoluene			1.0U					1.0	0.13
1,2-Dibromo-3-chloropropane			1.0U					1.0	0.29
Dibromochloromethane			1.0U					1.0	0.14
1,2-Dibromoethane			1.0U					1.0	0.22
Dibromomethane			1.0U					1.0	0.14
1,2-Dichlorobenzene			1.0U					1.0	0.065
1,3-Dichlorobenzene			1.0U					1.0	0.12
1,4-Dichlorobenzene			1.0U					1.0	0.13
Dichlorodifluoromethane			1.0U					1.0	0.17
1,1-Dichloroethane			1.0U					1.0	0.076
1,2-Dichloroethane			1.0U					1.0	0.15
1,1-Dichloroethene			1.0U					1.0	0.14
cis-1,2-Dichloroethene			1.0U					1.0	0.17
trans-1,2-Dichloroethene			1.0U					1.0	0.16
1,2-Dichloropropane			1.0U					1.0	0.10
1,3-Dichloropropane			1.0U					1.0	0.14
2,2-Dichloropropane			1.0U					1.0	0.24
1,1-Dichloropropene			1.0U					1.0	0.17
cis-1,3-Dichloropropene			1.0U					1.0	0.14
trans-1,3-Dichloropropene			1.0U					1.0	0.16

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B									
Method Blank (Continued)						Analyzed:		03/11/2008	By: JDM
Unit: ug/L						Analytical Batch:		8031246	
Ethylbenzene			1.0U					1.0	0.13
Hexachlorobutadiene			1.0U					1.0	0.23
2-Hexanone			5.0U					5.0	0.42
Isopropylbenzene			1.0U					1.0	0.12
4-Isopropyltoluene			1.0U					1.0	0.057
Methyl tert-Butyl Ether			1.0U					1.0	0.096
Methylene Chloride			**0.0900 J**					1.0	0.051
2-Butanone (MEK)			5.0U					5.0	0.33
4-Methyl-2-pentanone (MIBK)			5.0U					5.0	0.38
Naphthalene			5.0U					5.0	0.13
n-Propylbenzene			1.0U					1.0	0.14
Styrene			1.0U					1.0	0.11
1,1,1,2-Tetrachloroethane			1.0U					1.0	0.15
1,1,2,2-Tetrachloroethane			1.0U					1.0	0.10
Tetrachloroethene			1.0U					1.0	0.15
Toluene			1.0U					1.0	0.072
1,2,3-Trichlorobenzene			1.0U					1.0	0.13
1,2,4-Trichlorobenzene			1.0U					1.0	0.16
1,1,1-Trichloroethane			1.0U					1.0	0.11
1,1,2-Trichloroethane			1.0U					1.0	0.21
Trichloroethene			1.0U					1.0	0.17
Trichlorofluoromethane			1.0U					1.0	0.18
1,2,3-Trichloropropane			1.0U					1.0	0.071
1,2,4-Trimethylbenzene			1.0U					1.0	0.13
1,3,5-Trimethylbenzene			1.0U					1.0	0.12
Vinyl Chloride			1.0U					1.0	0.17
Xylene, Meta + Para			2.0U					2.0	0.23
Xylene, Ortho			1.0U					1.0	0.13
Surrogates									
Dibromofluoromethane				105	*88-115*				
1,2-Dichloroethane-d4				101	*81-116*				
Toluene-d8				98	*87-113*				
4-Bromofluorobenzene				90	*78-116*				
Laboratory Control Sample						Analyzed:		03/10/2008	By: JDM
Unit: ug/L						Analytical Batch:		8031245	
*Acetone		40.0	**37.6 B**	94	52-134			5.0	1.2

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Laboratory Control Sample (Continued) Analyzed: 03/10/2008 By: JDM
Unit: ug/L Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Benzene		40.0	**42.1**	105	86-122			1.0	0.12
Bromobenzene		40.0	**41.1**	103	85-118			1.0	0.18
Bromochloromethane		40.0	**42.6**	106	79-122			1.0	0.20
Bromodichloromethane		40.0	**45.8**	115	81-126			1.0	0.19
Bromoform		40.0	**38.2**	96	55-126			1.0	0.23
Bromomethane		40.0	**43.6**	109	56-140			1.0	0.19
n-Butylbenzene		40.0	**47.4**	119	79-122			1.0	0.14
sec-Butylbenzene		40.0	**46.1**	115	85-118			1.0	0.12
tert-Butylbenzene		40.0	**46.9**	**117**	85-115			1.0	0.065
Carbon Disulfide		40.0	**46.9**	117	74-133			5.0	0.28
Carbon Tetrachloride		40.0	**49.3**	123	80-126			1.0	0.15
Chlorobenzene		40.0	**42.4**	106	88-114			1.0	0.12
Chloroethane		40.0	**42.1**	105	71-136			1.0	0.20
Chloroform		40.0	**43.9**	110	86-120			1.0	0.061
Chloromethane		40.0	**40.9**	102	68-130			1.0	0.060
2-Chlorotoluene		40.0	**43.5**	109	91-116			1.0	0.20
4-Chlorotoluene		40.0	**43.4**	109	89-115			1.0	0.13
1,2-Dibromo-3-chloropropane		40.0	**34.7**	87	61-123			1.0	0.29
Dibromochloromethane		40.0	**39.8**	99	73-114			1.0	0.14
1,2-Dibromoethane		40.0	**41.3**	103	81-118			1.0	0.22
Dibromomethane		40.0	**42.3**	106	83-120			1.0	0.14
1,2-Dichlorobenzene		40.0	**43.7**	109	87-119			1.0	0.065
1,3-Dichlorobenzene		40.0	**43.2**	108	88-116			1.0	0.12
1,4-Dichlorobenzene		40.0	**42.3**	106	86-117			1.0	0.13
Dichlorodifluoromethane		40.0	**44.5**	111	67-133			1.0	0.17
1,1-Dichloroethane		40.0	**43.6**	109	80-122			1.0	0.076
1,2-Dichloroethane		40.0	**42.6**	107	78-121			1.0	0.15
1,1-Dichloroethene		40.0	**43.8**	110	81-125			1.0	0.14
cis-1,2-Dichloroethene		40.0	**44.9**	112	84-121			1.0	0.17
trans-1,2-Dichloroethene		40.0	**43.8**	109	85-121			1.0	0.16
1,2-Dichloropropane		40.0	**42.7**	107	74-125			1.0	0.10
1,3-Dichloropropane		40.0	**40.4**	101	82-117			1.0	0.14
2,2-Dichloropropane		40.0	**49.3**	123	48-136			1.0	0.24
1,1-Dichloropropene		40.0	**45.6**	114	83-123			1.0	0.17
cis-1,3-Dichloropropene		40.0	**39.9**	100	78-119			1.0	0.14
trans-1,3-Dichloropropene		40.0	**38.1**	95	70-125			1.0	0.16

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Laboratory Control Sample (Continued) Analyzed: 03/10/2008 By: JDM
Unit: ug/L Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Ethylbenzene		40.0	**45.1**	113	86-116			1.0	0.13
Hexachlorobutadiene		40.0	**45.0**	112	77-117			1.0	0.23
2-Hexanone		40.0	**32.3**	81	53-137			5.0	0.42
Isopropylbenzene		40.0	**47.1**	118	90-118			1.0	0.12
4-Isopropyltoluene		40.0	**43.5**	109	84-119			1.0	0.057
Methyl tert-Butyl Ether		40.0	**40.7**	102	82-117			1.0	0.096
Methylene Chloride		40.0	**43.4**	108	74-135			1.0	0.051
2-Butanone (MEK)		40.0	**41.8**	104	60-134			5.0	0.33
4-Methyl-2-pentanone (MIBK)		40.0	**33.5**	84	53-142			5.0	0.38
Naphthalene		40.0	**36.4**	91	69-118			5.0	0.13
n-Propylbenzene		40.0	**45.7**	114	88-119			1.0	0.14
Styrene		40.0	**44.0**	110	81-115			1.0	0.11
1,1,1,2-Tetrachloroethane		40.0	**42.8**	107	85-120			1.0	0.15
1,1,2,2-Tetrachloroethane		40.0	**36.9**	92	81-127			1.0	0.10
Tetrachloroethene		40.0	**43.6**	109	85-115			1.0	0.15
Toluene		40.0	**43.8**	110	87-123			1.0	0.072
1,2,3-Trichlorobenzene		40.0	**44.5**	111	74-125			1.0	0.13
1,2,4-Trichlorobenzene		40.0	**40.6**	102	75-127			1.0	0.16
1,1,1-Trichloroethane		40.0	**46.3**	116	81-123			1.0	0.11
1,1,2-Trichloroethane		40.0	**40.8**	102	86-123			1.0	0.21
Trichloroethene		40.0	**44.1**	110	80-122			1.0	0.17
Trichlorofluoromethane		40.0	**45.6**	114	78-130			1.0	0.18
1,2,3-Trichloropropane		40.0	**38.5**	96	72-125			1.0	0.071
1,2,4-Trimethylbenzene		40.0	**43.0**	107	86-116			1.0	0.13
1,3,5-Trimethylbenzene		40.0	**45.8**	114	85-117			1.0	0.12
Vinyl Chloride		40.0	**41.9**	105	73-130			1.0	0.17
Xylene, Meta + Para		80.0	**93.9**	117	86-118			2.0	0.23
Xylene, Ortho		40.0	**47.3**	**118**	87-112			1.0	0.13
Surrogates									
Dibromofluoromethane				105	*88-115*				
1,2-Dichloroethane-d4				99	*81-116*				
Toluene-d8				102	*87-113*				
4-Bromofluorobenzene				100	*78-116*				

Laboratory Control Sample Analyzed: 03/11/2008 By: JDM
Unit: ug/L Analytical Batch: 8031246

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
*Acetone		40.0	**42.9 B**	107	52-134			5.0	1.2

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Laboratory Control Sample (Continued) Analyzed: 03/11/2008 By: JDM

Unit: ug/L Analytical Batch: 8031246

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Benzene		40.0	**38.9**	97	86-122			1.0	0.12
Bromobenzene		40.0	**38.7**	97	85-118			1.0	0.18
Bromochloromethane		40.0	**39.8**	100	79-122			1.0	0.20
Bromodichloromethane		40.0	**42.0**	105	81-126			1.0	0.19
Bromoform		40.0	**35.4**	89	55-126			1.0	0.23
Bromomethane		40.0	**41.2**	103	56-140			1.0	0.19
n-Butylbenzene		40.0	**42.9**	107	79-122			1.0	0.14
sec-Butylbenzene		40.0	**42.2**	106	85-118			1.0	0.12
tert-Butylbenzene		40.0	**43.3**	108	85-115			1.0	0.065
Carbon Disulfide		40.0	**46.3**	116	74-133			5.0	0.28
Carbon Tetrachloride		40.0	**40.6**	101	80-126			1.0	0.15
Chlorobenzene		40.0	**38.4**	96	88-114			1.0	0.12
Chloroethane		40.0	**39.5**	99	71-136			1.0	0.20
Chloroform		40.0	**38.9**	97	86-120			1.0	0.061
Chloromethane		40.0	**39.8**	100	68-130			1.0	0.060
Chlorotoluene		40.0	**41.1**	103	91-116			1.0	0.20
4-Chlorotoluene		40.0	**40.6**	101	89-115			1.0	0.13
1,2-Dibromo-3-chloropropane		40.0	**36.1**	90	61-123			1.0	0.29
Dibromochloromethane		40.0	**36.3**	91	73-114			1.0	0.14
1,2-Dibromoethane		40.0	**41.0**	102	81-118			1.0	0.22
Dibromomethane		40.0	**41.9**	105	83-120			1.0	0.14
1,2-Dichlorobenzene		40.0	**40.6**	102	87-119			1.0	0.065
1,3-Dichlorobenzene		40.0	**40.2**	100	88-116			1.0	0.12
1,4-Dichlorobenzene		40.0	**39.2**	98	86-117			1.0	0.13
Dichlorodifluoromethane		40.0	**39.9**	100	67-133			1.0	0.17
1,1-Dichloroethane		40.0	**39.8**	100	80-122			1.0	0.076
1,2-Dichloroethane		40.0	**40.0**	100	78-121			1.0	0.15
1,1-Dichloroethene		40.0	**40.9**	102	81-125			1.0	0.14
cis-1,2-Dichloroethene		40.0	**41.0**	103	84-121			1.0	0.17
trans-1,2-Dichloroethene		40.0	**40.6**	101	85-121			1.0	0.16
1,2-Dichloropropane		40.0	**41.5**	104	74-125			1.0	0.10
1,3-Dichloropropane		40.0	**39.4**	98	82-117			1.0	0.14
2,2-Dichloropropane		40.0	**42.0**	105	48-136			1.0	0.24
1,1-Dichloropropene		40.0	**41.8**	105	83-123			1.0	0.17
cis-1,3-Dichloropropene		40.0	**38.7**	97	78-119			1.0	0.14
trans-1,3-Dichloropropene		40.0	**37.6**	94	70-125			1.0	0.16

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TriMatrix Laboratories, Inc.

QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B									
Laboratory Control Sample (Continued)						Analyzed:		03/11/2008	By: JDM
Unit: ug/L						Analytical Batch:		8031246	
Ethylbenzene		40.0	**40.2**	100	86-116			1.0	0.13
Hexachlorobutadiene		40.0	**40.7**	102	77-117			1.0	0.23
2-Hexanone		40.0	**39.4**	98	53-137			5.0	0.42
Isopropylbenzene		40.0	**43.8**	110	90-118			1.0	0.12
4-Isopropyltoluene		40.0	**39.9**	100	84-119			1.0	0.057
Methyl tert-Butyl Ether		40.0	**42.4**	106	82-117			1.0	0.096
Methylene Chloride		40.0	**39.8**	99	74-135			1.0	0.051
2-Butanone (MEK)		40.0	**40.5**	101	60-134			5.0	0.33
4-Methyl-2-pentanone (MIBK)		40.0	**40.8**	102	53-142			5.0	0.38
Naphthalene		40.0	**43.7**	109	69-118			5.0	0.13
n-Propylbenzene		40.0	**41.6**	104	88-119			1.0	0.14
Styrene		40.0	**39.4**	98	81-115			1.0	0.11
1,1,1,2-Tetrachloroethane		40.0	**39.0**	97	85-120			1.0	0.15
1,1,2,2-Tetrachloroethane		40.0	**38.6**	96	81-127			1.0	0.10
Tetrachloroethene		40.0	**39.6**	99	85-115			1.0	0.15
Toluene		40.0	**41.3**	103	87-123			1.0	0.072
1,2,3-Trichlorobenzene		40.0	**45.5**	114	74-125			1.0	0.13
1,2,4-Trichlorobenzene		40.0	**39.8**	100	75-127			1.0	0.16
1,1,1-Trichloroethane		40.0	**39.7**	99	81-123			1.0	0.11
1,1,2-Trichloroethane		40.0	**41.2**	103	86-123			1.0	0.21
Trichloroethene		40.0	**42.2**	105	80-122			1.0	0.17
Trichlorofluoromethane		40.0	**38.6**	96	78-130			1.0	0.18
1,2,3-Trichloropropane		40.0	**39.8**	99	72-125			1.0	0.071
1,2,4-Trimethylbenzene		40.0	**39.5**	99	86-116			1.0	0.13
1,3,5-Trimethylbenzene		40.0	**42.6**	106	85-117			1.0	0.12
Vinyl Chloride		40.0	**40.3**	101	73-130			1.0	0.17
Xylene, Meta + Para		80.0	**84.3**	105	86-118			2.0	0.23
Xylene, Ortho		40.0	**42.3**	106	87-112			1.0	0.13
Surrogates									
Dibromofluoromethane				100	*88-115*				
1,2-Dichloroethane-d4				94	*81-116*				
Toluene-d8				103	*87-113*				
4-Bromofluorobenzene				100	*78-116*				
Matrix Spike 0803115-04 MW-14						Analyzed:		03/10/2008	By: JDM
Unit: ug/L						Analytical Batch:		8031245	
Acetone	5.0 U	40.0	5.0U		54-146			5.0	1.2

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Matrix Spike (Continued) 0803115-04 MW-14 | Analyzed: 03/10/2008 | By: JDM
Unit: ug/L | Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Benzene	1.0 U	40.0	**44.4**	111	84-127			1.0	0.12
Bromobenzene	1.0 U	40.0	**38.4**	96	85-117			1.0	0.18
Bromochloromethane	1.0 U	40.0	**46.6**	116	80-123			1.0	0.20
Bromodichloromethane	1.0 U	40.0	**48.4**	121	77-130			1.0	0.19
Bromoform	1.0 U	40.0	**39.0**	97	52-123			1.0	0.23
Bromomethane	1.0 U	40.0	**36.2**	90	52-127			1.0	0.19
n-Butylbenzene	1.0 U	40.0	**41.8**	105	75-121			1.0	0.14
sec-Butylbenzene	1.0 U	40.0	**42.8**	107	84-118			1.0	0.12
tert-Butylbenzene	1.0 U	40.0	**45.0**	113	86-116			1.0	0.065
Carbon Disulfide	5.0 U	40.0	5.0 U		63-160			5.0	0.28
Carbon Tetrachloride	1.0 U	40.0	**54.2**	**135**	83-126			1.0	0.15
Chlorobenzene	1.0 U	40.0	**43.8**	110	89-115			1.0	0.12
Chloroethane	1.0 U	40.0	**43.7**	109	77-141			1.0	0.20
Chloroform	1.0 U	40.0	**48.5**	121	87-123			1.0	0.061
Chloromethane	1.0 U	40.0	**44.3**	111	66-132			1.0	0.060
Chlorotoluene	1.0 U	40.0	**42.3**	106	91-117			1.0	0.20
4-Chlorotoluene	1.0 U	40.0	**41.2**	103	86-116			1.0	0.13
1,2-Dibromo-3-chloropropane	1.0 U	40.0	**31.3**	78	56-121			1.0	0.29
Dibromochloromethane	1.0 U	40.0	**40.0**	100	74-110			1.0	0.14
1,2-Dibromoethane	1.0 U	40.0	**41.8**	105	80-117			1.0	0.22
Dibromomethane	1.0 U	40.0	**43.6**	109	79-124			1.0	0.14
1,2-Dichlorobenzene	1.0 U	40.0	**42.3**	106	89-115			1.0	0.065
1,3-Dichlorobenzene	1.0 U	40.0	**41.4**	104	89-114			1.0	0.12
1,4-Dichlorobenzene	1.0 U	40.0	**41.1**	103	87-114			1.0	0.13
Dichlorodifluoromethane	1.0 U	40.0	**46.7**	117	62-126			1.0	0.17
1,1-Dichloroethane	2.36	40.0	**48.8**	116	82-125			1.0	0.076
1,2-Dichloroethane	1.0 U	40.0	**48.1**	120	78-120			1.0	0.15
1,1-Dichloroethene	1.0 U	40.0	**47.1**	118	85-130			1.0	0.14
cis-1,2-Dichloroethene	23.2	40.0	**68.0**	112	84-127			1.0	0.17
trans-1,2-Dichloroethene	2.50	40.0	**48.7**	116	87-125			1.0	0.16
1,2-Dichloropropane	1.0 U	40.0	**42.2**	105	75-125			1.0	0.10
1,3-Dichloropropane	1.0 U	40.0	**40.7**	102	76-119			1.0	0.14
2,2-Dichloropropane	1.0 U	40.0	**39.8**	100	41-120			1.0	0.24
1,1-Dichloropropene	1.0 U	40.0	**48.0**	120	83-124			1.0	0.17
cis-1,3-Dichloropropene	1.0 U	40.0	**35.2**	88	68-122			1.0	0.14
trans-1,3-Dichloropropene	1.0 U	40.0	**36.0**	90	66-121			1.0	0.16

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Matrix Spike (Continued) 0803115-04 MW-14 — Analyzed: 03/10/2008 By: JDM
Unit: ug/L — Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Ethylbenzene	1.0 U	40.0	**45.4**	114	87-118			1.0	0.13
Hexachlorobutadiene	1.0 U	40.0	**42.0**	105	73-117			1.0	0.23
2-Hexanone	5.0 U	40.0	5.0U		46-149			5.0	0.42
Isopropylbenzene	1.0 U	40.0	**44.4**	111	89-121			1.0	0.12
4-Isopropyltoluene	1.0 U	40.0	**39.3**	98	83-116			1.0	0.057
Methyl tert-Butyl Ether	1.0 U	40.0	**40.5**	101	83-113			1.0	0.096
Methylene Chloride	1.0 U	40.0	**46.9**	117	87-119			1.0	0.051
2-Butanone (MEK)	5.0 U	40.0	**5.19**	**13**	62-140			5.0	0.33
4-Methyl-2-pentanone (MIBK)	5.0 U	40.0	5.0U		54-152			5.0	0.38
Naphthalene	5.0 U	40.0	**33.8**	84	61-126			5.0	0.13
n-Propylbenzene	1.0 U	40.0	**42.0**	105	89-119			1.0	0.14
Styrene	1.0 U	40.0	**33.3**	83	79-114			1.0	0.11
1,1,1,2-Tetrachloroethane	1.0 U	40.0	**45.4**	113	85-120			1.0	0.15
1,1,2,2-Tetrachloroethane	1.0 U	40.0	**34.8**	87	82-126			1.0	0.10
Tetrachloroethene	1.0 U	40.0	**45.1**	113	83-117			1.0	0.15
oluene	1.0 U	40.0	**43.5**	109	88-125			1.0	0.072
1,2,3-Trichlorobenzene	1.0 U	40.0	**42.2**	106	71-126			1.0	0.13
1,2,4-Trichlorobenzene	1.0 U	40.0	**37.2**	93	70-125			1.0	0.16
1,1,1-Trichloroethane	1.0 U	40.0	**52.6**	**131**	82-126			1.0	0.11
1,1,2-Trichloroethane	1.0 U	40.0	**40.8**	102	84-124			1.0	0.21
Trichloroethene	1.0 U	40.0	**46.1**	115	81-124			1.0	0.17
Trichlorofluoromethane	1.0 U	40.0	**50.0**	125	79-135			1.0	0.18
1,2,3-Trichloropropane	1.0 U	40.0	**37.7**	94	70-120			1.0	0.071
1,2,4-Trimethylbenzene	1.0 U	40.0	**34.5**	86	86-115			1.0	0.13
1,3,5-Trimethylbenzene	1.0 U	40.0	**36.1**	90	86-114			1.0	0.12
Vinyl Chloride	4.40	40.0	**46.1**	104	71-136			1.0	0.17
Xylene, Meta + Para	2.0 U	80.0	**89.9**	112	85-119			2.0	0.23
Xylene, Ortho	1.0 U	40.0	**45.1**	**113**	88-112			1.0	0.13
Surrogates									
Dibromofluoromethane				114	*88-115*				
1,2-Dichloroethane-d4				109	*81-116*				
Toluene-d8				99	*87-113*				
4-Bromofluorobenzene				104	*78-116*				

Matrix Spike Duplicate 0803115-04 MW-14 — Analyzed: 03/10/2008 By: JDM
Unit: ug/L — Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Acetone	5.0 U	40.0	5.0U		54-146		27	5.0	1.2

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Matrix Spike Duplicate (Continued) 0803115-04 MW-14 — Analyzed: 03/10/2008 By: JDM

Unit: ug/L — Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Benzene	1.0 U	40.0	**40.3**	101	84-127	**10**	8	1.0	0.12
Bromobenzene	1.0 U	40.0	**40.1**	100	85-117	4	8	1.0	0.18
Bromochloromethane	1.0 U	40.0	**45.5**	114	80-123	2	10	1.0	0.20
Bromodichloromethane	1.0 U	40.0	**47.4**	119	77-130	2	8	1.0	0.19
Bromoform	1.0 U	40.0	**39.3**	98	52-123	0.8	10	1.0	0.23
Bromomethane	1.0 U	40.0	**39.0**	98	52-127	8	32	1.0	0.19
n-Butylbenzene	1.0 U	40.0	**42.5**	106	75-121	2	8	1.0	0.14
sec-Butylbenzene	1.0 U	40.0	**44.5**	111	84-118	4	9	1.0	0.12
tert-Butylbenzene	1.0 U	40.0	**46.6**	116	86-116	3	9	1.0	0.065
Carbon Disulfide	5.0 U	40.0	5.0U		63-160		16	5.0	0.28
Carbon Tetrachloride	1.0 U	40.0	**52.7**	**132**	83-126	3	10	1.0	0.15
Chlorobenzene	1.0 U	40.0	**44.5**	111	89-115	2	8	1.0	0.12
Chloroethane	1.0 U	40.0	**44.9**	112	77-141	3	13	1.0	0.20
Chloroform	1.0 U	40.0	**46.1**	115	87-123	5	8	1.0	0.061
Chloromethane	1.0 U	40.0	**45.3**	113	66-132	2	13	1.0	0.060
Chlorotoluene	1.0 U	40.0	**42.3**	106	91-117	0.2	8	1.0	0.20
4-Chlorotoluene	1.0 U	40.0	**42.2**	106	86-116	3	8	1.0	0.13
1,2-Dibromo-3-chloropropane	1.0 U	40.0	**34.8**	87	56-121	11	14	1.0	0.29
Dibromochloromethane	1.0 U	40.0	**40.4**	101	74-110	1	9	1.0	0.14
1,2-Dibromoethane	1.0 U	40.0	**42.3**	106	80-117	1	8	1.0	0.22
Dibromomethane	1.0 U	40.0	**42.7**	107	79-124	2	8	1.0	0.14
1,2-Dichlorobenzene	1.0 U	40.0	**43.2**	108	89-115	2	7	1.0	0.065
1,3-Dichlorobenzene	1.0 U	40.0	**42.6**	106	89-114	3	8	1.0	0.12
1,4-Dichlorobenzene	1.0 U	40.0	**41.3**	103	87-114	0.6	8	1.0	0.13
Dichlorodifluoromethane	1.0 U	40.0	**46.7**	117	62-126	0	14	1.0	0.17
1,1-Dichloroethane	2.36	40.0	**48.3**	115	82-125	1	10	1.0	0.076
1,2-Dichloroethane	1.0 U	40.0	**47.0**	118	78-120	2	8	1.0	0.15
1,1-Dichloroethene	1.0 U	40.0	**46.7**	117	85-130	0.8	10	1.0	0.14
cis-1,2-Dichloroethene	23.2	40.0	**67.2**	110	84-127	1	9	1.0	0.17
trans-1,2-Dichloroethene	2.50	40.0	**48.3**	115	87-125	0.8	9	1.0	0.16
1,2-Dichloropropane	1.0 U	40.0	**42.6**	107	75-125	1	10	1.0	0.10
1,3-Dichloropropane	1.0 U	40.0	**41.6**	104	76-119	2	9	1.0	0.14
2,2-Dichloropropane	1.0 U	40.0	**38.9**	97	41-120	2	10	1.0	0.24
1,1-Dichloropropene	1.0 U	40.0	**47.0**	117	83-124	2	9	1.0	0.17
cis-1,3-Dichloropropene	1.0 U	40.0	**35.7**	89	68-122	1	9	1.0	0.14
trans-1,3-Dichloropropene	1.0 U	40.0	**36.2**	91	66-121	0.8	9	1.0	0.16

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QUALITY CONTROL REPORT

Volatile Organic Compounds by EPA Method 8260B (Continued)

QC Batch: 0802831 (Continued) 5030B Aqueous Purge & Trap/USEPA-8260B

Matrix Spike Duplicate (Continued) 0803115-04 MW-14 Analyzed: 03/10/2008 By: JDM
Unit: ug/L Analytical Batch: 8031245

Analyte	Sample Conc.	Spike Qty.	Result	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Ethylbenzene	1.0 U	40.0	**46.0**	115	87-118	1	7	1.0	0.13
Hexachlorobutadiene	1.0 U	40.0	**42.0**	105	73-117	0	11	1.0	0.23
2-Hexanone	5.0 U	40.0	5.0 U		46-149		10	5.0	0.42
Isopropylbenzene	1.0 U	40.0	**45.4**	114	89-121	2	9	1.0	0.12
4-Isopropyltoluene	1.0 U	40.0	**40.4**	101	83-116	3	8	1.0	0.057
Methyl tert-Butyl Ether	1.0 U	40.0	**41.8**	104	83-113	3	16	1.0	0.096
Methylene Chloride	1.0 U	40.0	**47.6**	119	87-119	1	11	1.0	0.051
2-Butanone (MEK)	5.0 U	40.0	**2.53**	**6**	62-140	**69**	20	5.0	0.33
4-Methyl-2-pentanone (MIBK)	5.0 U	40.0	5.0 U		54-152		9	5.0	0.38
Naphthalene	5.0 U	40.0	**36.2**	90	61-126	7	9	5.0	0.13
n-Propylbenzene	1.0 U	40.0	**43.5**	109	89-119	3	9	1.0	0.14
Styrene	1.0 U	40.0	**36.1**	90	79-114	8	8	1.0	0.11
1,1,1,2-Tetrachloroethane	1.0 U	40.0	**46.0**	115	85-120	1	7	1.0	0.15
1,1,2,2-Tetrachloroethane	1.0 U	40.0	**36.2**	90	82-126	4	9	1.0	0.10
Tetrachloroethene	1.0 U	40.0	**45.2**	113	83-117	0.3	8	1.0	0.15
Toluene	1.0 U	40.0	**43.0**	107	88-125	1	8	1.0	0.072
1,2,3-Trichlorobenzene	1.0 U	40.0	**43.4**	108	71-126	3	9	1.0	0.13
1,2,4-Trichlorobenzene	1.0 U	40.0	**38.2**	96	70-125	3	8	1.0	0.16
1,1,1-Trichloroethane	1.0 U	40.0	**50.5**	126	82-126	4	9	1.0	0.11
1,1,2-Trichloroethane	1.0 U	40.0	**40.6**	102	84-124	0.3	10	1.0	0.21
Trichloroethene	1.0 U	40.0	**45.2**	113	81-124	2	8	1.0	0.17
Trichlorofluoromethane	1.0 U	40.0	**50.0**	125	79-135	0.2	9	1.0	0.18
1,2,3-Trichloropropane	1.0 U	40.0	**37.3**	93	70-120	0.9	9	1.0	0.071
1,2,4-Trimethylbenzene	1.0 U	40.0	**37.2**	93	86-115	7	7	1.0	0.13
1,3,5-Trimethylbenzene	1.0 U	40.0	**39.2**	98	86-114	**8**	7	1.0	0.12
Vinyl Chloride	4.40	40.0	**49.7**	113	71-136	8	10	1.0	0.17
Xylene, Meta + Para	2.0 U	80.0	**93.2**	117	85-119	4	6	2.0	0.23
Xylene, Ortho	1.0 U	40.0	**46.3**	**116**	88-112	3	7	1.0	0.13
Surrogates									
Dibromofluoromethane				108	*88-115*				
1,2-Dichloroethane-d4				105	*81-116*				
Toluene-d8				97	*87-113*				
4-Bromofluorobenzene				105	*78-116*				

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QUALITY CONTROL REPORT

Dissolved Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Arsenic/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/18/2008 By: DSC			
Method Blank			1.0 U	ug/L					1.0	0.74
Laboratory Control Sample		50.0	**48.6**	ug/L	97	78-114			1.0	0.74
0803066-01 MW-J2										
Matrix Spike	11.1	50.0	**63.5**	ug/L	105	73-127			1.0	0.74
Matrix Spike Duplicate	11.1	50.0	**61.3**	ug/L	100	73-127	4	20	1.0	0.74
Analyte: Barium/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/17/2008 By: DWJ			
Method Blank			100 U	ug/L					100	0.52
Laboratory Control Sample		50.0	**48.4 J**	ug/L	97	86-117			100	0.52
0803066-01 MW-J2										
Matrix Spike	193	50.0	**242**	ug/L	97	53-142			1.0	0.52
Matrix Spike Duplicate	193	50.0	**240**	ug/L	92	53-142	1	20	1.0	0.52
Analyte: Cadmium/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/17/2008 By: DWJ			
Method Blank			0.20 U	ug/L					0.20	0.062
Laboratory Control Sample		50.0	**46.8**	ug/L	94	83-113			0.20	0.062
0803066-01 MW-J2										
Matrix Spike	0.530	50.0	**50.5**	ug/L	100	74-127			0.20	0.062
Matrix Spike Duplicate	0.530	50.0	**49.4**	ug/L	98	74-127	2	20	0.20	0.062
Analyte: Chromium/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/17/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.31
Laboratory Control Sample		50.0	**48.4**	ug/L	97	83-127			1.0	0.31
0803066-01 MW-J2										
Matrix Spike	<RL	50.0	**49.4**	ug/L	99	76-127			1.0	0.31
Matrix Spike Duplicate	<RL	50.0	**48.4**	ug/L	97	76-127	2	20	1.0	0.31
Analyte: Copper/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/17/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.33

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QUALITY CONTROL REPORT

Dissolved Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Copper/USEPA-6020A (Continued)										
QC Batch: 0802794 (Continued) (General Metals Prep) — Analyzed: 03/17/2008 By: DWJ										
Laboratory Control Sample		50.0	**52.0**	ug/L	104	87-119			1.0	0.33
0803066-01 MW-J2										
Matrix Spike	0.813	50.0	**49.3**	ug/L	97	73-122			1.0	0.33
Matrix Spike Duplicate	0.813	50.0	**48.9**	ug/L	96	73-122	0.9	20	1.0	0.33
Analyte: Lead/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep) — Analyzed: 03/17/2008 By: DWJ										
Method Blank			1.0 U	ug/L					1.0	0.33
Laboratory Control Sample		50.0	**48.0**	ug/L	96	84-120			1.0	0.33
0803066-01 MW-J2										
Matrix Spike	<RL	50.0	**48.9**	ug/L	98	75-134			1.0	0.33
Matrix Spike Duplicate	<RL	50.0	**48.0**	ug/L	96	75-134	2	20	1.0	0.33
Analyte: Mercury/USEPA-7470A										
QC Batch: 0802910 (7470A Digestion - Dissolved) — Analyzed: 03/18/2008 By: DSC										
Method Blank			0.20 U	ug/L					0.20	0.046
Laboratory Control Sample		2.00	**2.15**	ug/L	108	85-115			0.20	0.046
0803066-01 MW-J2										
Matrix Spike	<RL	2.00	**2.21**	ug/L	110	79-118			0.20	0.046
Matrix Spike Duplicate	<RL	2.00	**2.16**	ug/L	108	79-118	2	20	0.20	0.046
Analyte: Nickel/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep) — Analyzed: 03/17/2008 By: DWJ										
Method Blank			10 U	ug/L					10	0.28
Laboratory Control Sample		50.0	**48.8**	ug/L	98	84-116			10	0.28
Analyte: Selenium/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep) — Analyzed: 03/18/2008 By: DSC										
Method Blank			1.0 U	ug/L					1.0	0.92

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QUALITY CONTROL REPORT

Dissolved Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Selenium/USEPA-6020A (Continued)										
QC Batch: 0802794 (Continued) (General Metals Prep)							Analyzed: 03/18/2008 By: DSC			
Laboratory Control Sample		50.0	**49.0**	ug/L	98	74-110			1.0	0.92
0803066-01 MW-J2										
Matrix Spike	<RL	50.0	**49.3**	ug/L	99	59-155			1.0	0.92
Matrix Spike Duplicate	<RL	50.0	**46.7**	ug/L	93	59-155	5	20	1.0	0.92
Analyte: Silver/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/17/2008 By: DWJ			
Method Blank			0.20 U	ug/L					0.20	0.12
Laboratory Control Sample		50.0	**47.1**	ug/L	94	84-117			0.20	0.12
0803066-01 MW-J2										
Matrix Spike	<RL	50.0	**49.7**	ug/L	99	69-128			0.20	0.12
Matrix Spike Duplicate	<RL	50.0	**48.5**	ug/L	97	69-128	3	20	0.20	0.12
Analyte: Zinc/USEPA-6020A										
QC Batch: 0802794 (General Metals Prep)							Analyzed: 03/17/2008 By: DWJ			
Method Blank			**4.80 J**	ug/L					10	0.84
Laboratory Control Sample		50.0	**53.3**	ug/L	107	74-138			10	0.84
0803066-01 MW-J2										
Matrix Spike	5.73	50.0	**98.1**	ug/L	**185**	61-141			1.0	0.84
Matrix Spike Duplicate	5.73	50.0	**57.5**	ug/L	103	61-141	**52**	20	1.0	0.84

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Arsenic/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.74
Laboratory Control Sample		50.0	**46.0**	ug/L	92	80-114			1.0	0.74
0803066-01 MW-J2										
Matrix Spike	10.9	50.0	**58.6**	ug/L	95	81-119			1.0	0.74
Matrix Spike Duplicate	10.9	50.0	**59.4**	ug/L	97	81-119	1	20	1.0	0.74
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/13/2008 By: DSC			
Method Blank			1.0 U	ug/L					1.0	0.74
Laboratory Control Sample		50.0	**46.1**	ug/L	92	80-114			1.0	0.74
Analyte: Barium/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.52
Laboratory Control Sample		50.0	**47.9**	ug/L	96	83-117			1.0	0.52
0803066-01 MW-J2										
atrix Spike	179	50.0	**229**	ug/L	99	77-124			1.0	0.52
Matrix Spike Duplicate	179	50.0	**229**	ug/L	100	77-124	0.3	20	1.0	0.52
Analyte: Cadmium/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			0.20 U	ug/L					0.20	0.062
Laboratory Control Sample		50.0	**44.8**	ug/L	90	80-114			0.20	0.062
0803066-01 MW-J2										
Matrix Spike	1.16	50.0	**48.9**	ug/L	95	82-119			0.20	0.062
Matrix Spike Duplicate	1.16	50.0	**50.1**	ug/L	98	82-119	3	20	0.20	0.062
Analyte: Chromium/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.31
Laboratory Control Sample		50.0	**46.4**	ug/L	93	84-119			1.0	0.31

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Chromium/USEPA-6020A (Continued)										
QC Batch: 0802654 (Continued) (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
0803066-01 MW-J2										
Matrix Spike	4.80	50.0	**52.2**	ug/L	95	82-122			1.0	0.31
Matrix Spike Duplicate	4.80	50.0	**53.1**	ug/L	97	82-122	2	20	1.0	0.31
Analyte: Copper/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.33
Laboratory Control Sample		50.0	**46.1**	ug/L	92	86-119			1.0	0.33
0803066-01 MW-J2										
Matrix Spike	1.27	50.0	**47.7**	ug/L	93	81-118			1.0	0.33
Matrix Spike Duplicate	1.27	50.0	**48.2**	ug/L	94	81-118	1	20	1.0	0.33
QC Batch: 0802862 (3020A Digestion)							Analyzed: 03/17/2008 By: MSM			
Method Blank			**0.490 J**	ug/L					1.0	0.33
Laboratory Control Sample		50.0	**48.8**	ug/L	98	86-119			1.0	0.33
Analyte: Iron/USEPA-6010B										
QC Batch: 0802657 (3010A Digestion)							Analyzed: 03/18/2008 By: KLV			
Method Blank			10 U	ug/L					10	5.7
Laboratory Control Sample		400	**410**	ug/L	103	85-113			10	5.7
0803066-03 MW-17										
Matrix Spike	1070	400	**1540**	ug/L	118	73-132			10	5.7
Matrix Spike Duplicate	1070	400	**1480**	ug/L	105	73-132	4	20	10	5.7
Analyte: Lead/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			1.0 U	ug/L					1.0	0.33
Laboratory Control Sample		50.0	**45.4**	ug/L	91	80-116			1.0	0.33
0803066-01 MW-J2										
Matrix Spike	0.668	50.0	**48.3**	ug/L	95	82-122			1.0	0.33
Matrix Spike Duplicate	0.668	50.0	**49.1**	ug/L	97	82-122	2	20	1.0	0.33

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

Analyte: **Manganese**/USEPA-6020A

QC Batch: 0802654 (3020A Digestion) — Analyzed: 03/13/2008 By: DSC

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			1.0 U	ug/L					1.0	0.43
Laboratory Control Sample		50.0	**48.7**	ug/L	97	84-124			1.0	0.43

Analyte: **Mercury**/USEPA-7470A

QC Batch: 0802738 (7470A Digestion - Total) — Analyzed: 03/12/2008 By: JMF

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			0.20 U	ug/L					0.20	0.046
Laboratory Control Sample		2.00	**2.08**	ug/L	104	85-115			0.20	0.046
0803066-01 MW-J2										
Matrix Spike	<RL	2.00	**2.07**	ug/L	104	72-122			0.20	0.046
Matrix Spike Duplicate	<RL	2.00	**2.08**	ug/L	104	72-122	0.09	20	0.20	0.046

Analyte: **Nickel**/USEPA-6020A

QC Batch: 0802654 (3020A Digestion) — Analyzed: 03/12/2008 By: DWJ

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			1.0 U	ug/L					1.0	0.28
Laboratory Control Sample		50.0	1.0 U	ug/L		85-115			1.0	0.28
0803066-01 MW-J2										
Matrix Spike		50.0	1.0 U	ug/L		79-118			1.0	0.28
Matrix Spike Duplicate		50.0	1.0 U	ug/L		79-118		20	1.0	0.28

QC Batch: 0802654 (3020A Digestion) — Analyzed: 03/13/2008 By: DSC

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			1.0 U	ug/L					1.0	0.28
Laboratory Control Sample		50.0	**48.7**	ug/L	97	85-115			1.0	0.28

Analyte: **Selenium**/USEPA-6020A

QC Batch: 0802654 (3020A Digestion) — Analyzed: 03/13/2008 By: DSC

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			1.0 U	ug/L					1.0	0.92
Laboratory Control Sample		50.0	**47.9**	ug/L	96	71-115			1.0	0.92
0803066-01 MW-J2										
Matrix Spike	<RL	50.0	**48.8**	ug/L	98	65-123			1.0	0.92
Matrix Spike Duplicate	<RL	50.0	**49.1**	ug/L	98	65-123	0.6	20	1.0	0.92

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QUALITY CONTROL REPORT

Total Metals by EPA 6000/7000 Series Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: **Silver**/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			0.20 U	ug/L					0.20	0.12
Laboratory Control Sample		50.0	**44.9**	ug/L	90	84-115			0.20	0.12
0803066-01 MW-J2										
Matrix Spike	<RL	50.0	**47.1**	ug/L	94	80-115			0.20	0.12
Matrix Spike Duplicate	<RL	50.0	**46.4**	ug/L	93	80-115	2	20	0.20	0.12
Analyte: **Zinc**/USEPA-6020A										
QC Batch: 0802654 (3020A Digestion)							Analyzed: 03/12/2008 By: DWJ			
Method Blank			**13.8**	ug/L					1.0	0.84
*Laboratory Control Sample		50.0	**46.5 B**	ug/L	93	82-126			1.0	0.84
QC Batch: 0802862 (3020A Digestion)							Analyzed: 03/17/2008 By: MSM			
Method Blank			**2.00 J**	ug/L					10	0.84
Laboratory Control Sample		50.0	**59.5**	ug/L	119	82-126			10	0.84
0803066-01 MW-J2										
atrix Spike	19.8	50.0	**59.7**	ug/L	80	63-119			1.0	0.84
Matrix Spike Duplicate	19.8	50.0	**62.6**	ug/L	86	63-119	5	20	1.0	0.84

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QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Alkalinity, Total/USEPA-310.1										
QC Batch: 0802566 (General Inorganic Prep)							Analyzed: 03/06/2008 By: CAM			
Method Blank			2000 U	ug/L					2000	1800
Laboratory Control Sample		238000	**240000**	ug/L	101	91-110			2000	1800
0803066-04 MW-B1										
Matrix Spike	390000	238000	**640000**	ug/L	105	78-117			2000	1800
Duplicate	390000		**393000**	ug/L			0.8	20	2000	1800
Analyte: Chemical Oxygen Demand/USEPA-410.4										
QC Batch: 0802859 (410.4 COD Digestion)							Analyzed: 03/13/2008 By: CKD			
Method Blank			5000 U	ug/L					5000	2200
Laboratory Control Sample		20000	**21200**	ug/L	106	90-110			5000	2200
0803066-03 MW-17										
Matrix Spike	10900	20000	**31800**	ug/L	105	64-148			5000	2200
Matrix Spike Duplicate	10900	20000	**31500**	ug/L	103	64-148	1	20	5000	2200
Analyte: Chromium, Hexavalent-Dissolved/SM 3500-Cr B 20th										
QC Batch: 0802594 (Method-Specific Preparation)							Analyzed: 03/06/2008 By: INR			
Method Blank			5.0 U	ug/L					5.0	0.60
Laboratory Control Sample		10.0	**9.30**	ug/L	93	86-113			5.0	0.60
0803066-03 MW-17										
Matrix Spike	<RL	20.0	**20.5**	ug/L	102	61-147			5.0	0.60
Matrix Spike Duplicate	<RL	20.0	**20.0**	ug/L	100	61-147	2	20	5.0	0.60
QC Batch: 0802594 (Method-Specific Preparation)							Analyzed: 03/07/2008 By: INR			
Method Blank			5.0 U	ug/L					5.0	0.60
Laboratory Control Sample		10.0	**10.1**	ug/L	101	86-113			5.0	0.60
Analyte: Chromium, Hexavalent/SM 3500-Cr B 20th										
QC Batch: 0802595 (Method-Specific Preparation)							Analyzed: 03/06/2008 By: INR			
Method Blank			5.0 U	ug/L					5.0	0.60
Laboratory Control Sample		10.0	**9.30 J**	ug/L	93	86-113			50	0.60

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QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Analyte: Chromium, Hexavalent/SM 3500-Cr B 20th (Continued)										
QC Batch: 0802595 (Continued) (Method-Specific Preparation) — Analyzed: 03/06/2008 By: INR										
0803066-03 MW-17										
Matrix Spike	1.10 J	20.0	**20.6 J**	ug/L	98	54-142			50	0.60
Matrix Spike Duplicate	1.10 J	20.0	**21.4 J**	ug/L	102	54-142	4	20	50	0.60
QC Batch: 0802595 (Method-Specific Preparation) — Analyzed: 03/07/2008 By: INR										
Method Blank			5.0 U	ug/L					5.0	0.60
Laboratory Control Sample		10.0	**10.1 J**	ug/L	101	86-113			50	0.60
Analyte: Cyanide, Available/USEPA OIA-1677										
QC Batch: 0802973 (Method-Specific Preparation) — Analyzed: 03/13/2008 By: VAS										
Method Blank			2.0 U	ug/L					2.0	1.0
Laboratory Control Sample		5.00	**5.3900**	ug/L	108	82-132			2.0	1.0
0803066-01 MW-J2										
Matrix Spike	<RL	8.00	**7.1620**	ug/L	90	82-130			2.0	1.0
Matrix Spike Duplicate	<RL	8.00	**7.6070**	ug/L	95	82-130	6	11	2.0	1.0
Analyte: Cyanide, Total/USEPA-9014										
QC Batch: 0802652 (9010B Cyanide Distillation) — Analyzed: 03/10/2008 By: VAS										
Method Blank			5.0 U	ug/L					5.0	1.9
Method Blank			5.0 U	ug/L					5.0	1.9
Laboratory Control Sample		100	**96.2**	ug/L	96	90-110			5.0	1.9
Laboratory Control Sample		40.0	**38.6**	ug/L	97	90-110			5.0	1.9
Laboratory Control Sample		100	**98.4**	ug/L	98	90-110			5.0	1.9
Laboratory Control Sample		40.0	**35.9**	ug/L	90	90-110			5.0	1.9
0803066-01 MW-J2										
Matrix Spike	45.4	100	**146**	ug/L	100	59-128			5.0	1.9
Matrix Spike Duplicate	45.4	100	**146**	ug/L	100	59-128	0.05	20	5.0	1.9
0803115-04 MW-14										
Matrix Spike	<RL	100	**100**	ug/L	100	59-128			5.0	1.9
Matrix Spike Duplicate	<RL	100	**97.2**	ug/L	97	59-128	3	20	5.0	1.9
Analyte: Hardness as CaCO3/USEPA-130.2										
QC Batch: 0802733 (Method-Specific Preparation) — Analyzed: 03/11/2008 By: CKD										
Method Blank			2000 U	ug/L					2000	1400

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QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

Analyte: **Hardness as CaCO3**/USEPA-130.2 (Continued)

QC Batch: 0802733 (Continued) (Method-Specific Preparation) — Analyzed: 03/11/2008 By: CKD

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Laboratory Control Sample		200000	**202000**	ug/L	101	92-110			2000	1400
0803066-03 MW-17										
Matrix Spike	413000	200000	**616000**	ug/L	102	86-113			2000	1400
Duplicate	413000		**412000**	ug/L			0.2	20	2000	1400

Analyte: **Iron, Ferrous**/SM 3500-Fe B 20th

QC Batch: 0802719 (Method-Specific Preparation) — Analyzed: 03/07/2008 By: HLB

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			20 U	ug/L					20	7.0
Laboratory Control Sample		320	**296**	ug/L	93	80-120			20	7.0
0803066-03 MW-17										
Matrix Spike	803	1600	**2330**	ug/L	95	68-131			100	35
Duplicate	803		**820**	ug/L			2	20	100	35

Analyte: **Nitrogen, Nitrate+Nitrite**/USEPA-353.2

C Batch: 0802726 (Method-Specific Preparation) — Analyzed: 03/06/2008 By: HLB

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			50 U	ug/L					50	7.2
Laboratory Control Sample		500	**495**	ug/L	99	90-110			50	7.2
0803066-03 MW-17										
Matrix Spike	185	500	**676**	ug/L	98	90-110			50	7.2
Matrix Spike Duplicate	185	500	**694**	ug/L	102	90-110	3	20	50	7.2

Analyte: **Sulfate**/USEPA-375.4

QC Batch: 0802685 (General Inorganic Prep) — Analyzed: 03/10/2008 By: GEH

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			5000 U	ug/L					5000	1200
Laboratory Control Sample		20000	**21200**	ug/L	106	88-112			5000	1200
0803066-03 MW-17										
Matrix Spike	53000	20000	**73200**	ug/L	101	76-126			25000	5800
Matrix Spike Duplicate	53000	20000	**72500**	ug/L	98	76-126	1	20	25000	5800

Analyte: **Sulfide, Total**/USEPA-9034

QC Batch: 0802753 (General Inorganic Prep) — Analyzed: 03/11/2008 By: KNC

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Method Blank			1000 U	ug/L					1000	1000

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QUALITY CONTROL REPORT

Physical/Chemical Parameters by EPA/APHA/ASTM Methods (Continued)

Analyte: **Sulfide, Total**/USEPA-9034 (Continued)

QC Batch: 0802753 (Continued) (General Inorganic Prep) Analyzed: 03/11/2008 By: KNC

QC Type	Sample Conc.	Spike Qty.	Result	Unit	Spike % Rec.	Control Limits	RPD	RPD Limits	RL	MDL
Laboratory Control Sample		59500	**37800**	ug/L	64	44-116			1000	1000
0803066-04 MW-B1										
Matrix Spike	<RL	59500	**42100**	ug/L	71	41-99			1000	1000
Duplicate	<RL U		1000 U	ug/L				20	1000	1000

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STATEMENT OF DATA QUALIFICATIONS

Volatile Organic Compounds by EPA Method 8260B

Qualification:	The LCS and/or LCSD recovery exceeded the upper control limit. A positive result for this analyte in any sample from the associated QC batch is considered estimated. Non-detectable results are not qualified.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803066-01 MW-J2	tert-Butylbenzene
	0803066-01 MW-J2	Xylene, Ortho
	0803066-02 MW-B2	tert-Butylbenzene
	0803066-02 MW-B2	Xylene, Ortho
	0803066-03 MW-17	tert-Butylbenzene
	0803066-03 MW-17	Xylene, Ortho
	0803066-05 MW-22	tert-Butylbenzene
	0803066-05 MW-22	Xylene, Ortho
	0803066-07 MW-26	tert-Butylbenzene
	0803066-07 MW-26	Xylene, Ortho
	0803066-09 FB-1	tert-Butylbenzene
	0803066-09 FB-1	Xylene, Ortho
	0803115-04 MW-14	tert-Butylbenzene
	0803115-04 MW-14	Xylene, Ortho
Qualification:	Reanalysis was not possible due to insufficient sample.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803115-03 MW-24	
Qualification:	Matrix spike was not spiked with full list of target analytes, insufficient sample volume for re-analysis.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803115-04 MW-14	
Qualification:	The RPD between the MS and MSD results exceeded the control limit. The non-spiked sample result is considered estimated.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803115-04 MW-14	1,3,5-Trimethylbenzene
	0803115-04 MW-14	Benzene
Qualification:	The MS and/or MSD recovery exceeded the upper control limit. The non-spiked sample result for the same analyte was non-detect and is not qualified.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803115-04 MW-14	Carbon Tetrachloride
	0803115-04 MW-14	Xylene, Ortho
Qualification:	The MS or MSD recovery, but not both, was outside the control limit. The RPD is within the control limit. The unspiked sample result is not qualified.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803115-04 MW-14	1,1,1-Trichloroethane
Qualification:	One or more surrogate recoveries for the sample exceeded the upper control limit. Positive results are considered estimated. Non-detect results are not qualified.	
Analysis:	USEPA-8260B	
Sample/Analyte:	0803115-03 MW-24	

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STATEMENT OF DATA QUALIFICATIONS

Volatile Organic Compounds by EPA Method 8260B (Continued)

Qualification: One or more surrogate recoveries for the sample exceeded the upper control limit. Positive results are considered estimated. Non-detect results are not qualified.

Analysis: USEPA-8260B

STATEMENT OF DATA QUALIFICATIONS

Dissolved Metals by EPA 6000/7000 Series Methods

Qualification: The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the lower of the two results has been reported.

Analysis: USEPA-6020A

Sample/Analyte:

0803066-01 MW-J2	Selenium
0803066-02 MW-B2	Selenium
0803066-03 MW-17	Selenium
0803066-05 MW-22	Selenium
0803066-07 MW-26	Selenium
0803066-08 DUP-1	Selenium

Qualification: This analyte was not present in this sample at a concentration greater than 100 times the MDL, therefore serial dilution is not required.

Analysis: USEPA-6020A

Sample/Analyte: 0803066-01 MW-J2 Arsenic

Qualification: The MS and/or MSD recovery was outside the control limit. The non-spiked sample result is considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 0803066-01 MW-J2 Zinc

Qualification: The RPD between the MS and MSD results exceeded the control limit. The non-spiked sample result is considered estimated.

Analysis: USEPA-6020A

Sample/Analyte: 0803066-01 MW-J2 Zinc

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STATEMENT OF DATA QUALIFICATIONS

Total Metals by EPA 6000/7000 Series Methods

Qualification:	The analyte concentration in the associated MB was greater than or equal to the RL. The positive sample result, which was greater than 5 times the MB value, is not considered estimated.	
Analysis:	USEPA-6020A	
Sample/Analyte:	0803115-02 MW-11	Zinc
Qualification:	The % difference between the values of the isotopes monitored for this analyte exceeded 25%; the lower of the two results has been reported.	
Analysis:	USEPA-6020A	
Sample/Analyte:	0803066-01 MW-J2	Copper
	0803066-05 MW-22	Nickel
	0803066-07 MW-26	Nickel
Qualification:	This analyte was not present in this sample at a concentration greater than 100 times the MDL, therefore serial dilution is not required.	
Analysis:	USEPA-6020A	
Sample/Analyte:	0803066-01 MW-J2	Chromium

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STATEMENT OF DATA QUALIFICATIONS

Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Qualification:	Sample analysis performed on NaOH preserved bottle.	
Analysis:	USEPA OIA-1677	
Sample/Analyte:	0803066-01 MW-J2	Cyanide, Available
Qualification:	The referenced method for Iron, Ferrous specifies that analysis must occur immediately after sample collection. Since the analysis was not performed in the field, the reported result is considered estimated.	
Analysis:	SM 3500-Fe B 20th	
Sample/Analyte:	0803066-03 MW-17	Iron, Ferrous
	0803066-04 MW-B1	Iron, Ferrous
Qualification:	This method provides quantitative results for "acid-soluble" sulfides only. The semi-quantitative procedure for "acid-insoluble" sulfides (e.g. CuS and SnS) was not performed due to the poor recovery of these "acid-insoluble" complexes.	
Analysis:	USEPA-9034	
Sample/Analyte:	0803066-03 MW-17	Sulfide, Total
	0803066-04 MW-B1	Sulfide, Total

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Chain of Custody Record

COC No. 123480

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Cart: 1
VOA Rack/Tray: 590, 630-G
Receipt Log No.: 48-28
Project Chemist: CR
Laboratory Project No.: E-0803066

Client Name: CTI and Assoc.
Address: 12452 Emerson
Brighton MI 48116
Phone:
Fax:

Project Name: JCI
Client Project No./PO No.: 07501004O
Invoice No.: ☒ Client ☐ Other (comments)
Contact/Report To: R. Castell

Analyses Requested: SEMI ANNUAL (FTHOLD TRG) (ARM TRG)

Preservatives:
- H Other (note below) / Other (note below)
- A $NONE$ pH ?
- B HNO_3 pH<2
- C H_2SO_4 pH<2
- D 1+1 HCl pH<2
- E NaOH pH>12
- F Zn Ac NaOH pH>9
- G MeOH
- H Other (note below)

Container Type (corresponds to Container Packing List): 1 1 3 4 5 6 15 23 9 24

Test Group	Matrix Code	Laboratory Sample Number	Sample ID	Cooler ID	Sample Date	Sample Time	G	C	Matrix		1	1	3	4	5	6	15	23	9	24	Sample Comments
09		-01	MW-52	TM 2577	3-4-08	1435	X		AQ	X	2				1	1	1	1			
08		-02	MW-B2	"	3-4-08	1610	X		"	X	2				1	1	1				
07		-03	MW-17	"	3-5-08	1115	X		"	X	2	2	3	1	1	1	1		1	1	
07		-04	MW-B1	"	3-5-08	1240	X		"	X	2	2	3	1	1	1	1		1	1	
06		-05	MW-22	TM D142	3-5-08	1150	X		"	X	2		2		1	1	1				
06		-06	MW-2A	"	3-5-08	1410	X		"	X	2		2		1	1	1				MW-A2 (6)
06		-07	MW-26	"	3-5-08	1445	X		"	X	2		2		1	1	1				
FD 06		-08	DUP-1	"	3-5-08	1500	X		"	X	2		2		1	1	1				
FB 04	WQ	-09	FB-1	"	3-5-08	15:15	X		"	X		2									VOC ONLY

Sampled By (print): P. Riley / G. Hamberly
Sampler's Signature: [signature] / [signature]
Company: CTI and Associates

How Shipped? Hand Carrier
Tracking No.

Comments:

	Date	Time
1. Relinquished By: [signature]	3-5-08	1600
1. Received By: [signature]	3/5/08	1600
2. Relinquished By:		
2. Received By:		
3. Relinquished By: [signature]	3/5/08	1730
3. Received for Lab By: D. Nardin	3-5-08	17:30

TC

TriMatrix Laboratories, Inc.

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Phone (616) 975-4500 Fax (616) 942-7463
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Chain of Custody Record

COC No. 122450

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For Lab Use Only

Cart: 8
VOA Rack/Tray: 51, 444 - Blue
Receipt Log No.: 50-38
Project Chemist: 6
Laboratory Project No.: E 0803115

Client Name: CTI and ASSOCIATES
Address: 12482 EMERSON, BRIGHTON MI 48116
Phone:
Fax:

Project Name: JCI
Client Project No./P.O. No.: 0750100040
Invoice No.: ☒ Client ☐ Other (comment)
Contact/Report to: K. CASTEEL

Analyses Requested: SEMI ANNUAL; Yellow Tag; Gray Tag

Preservatives: A NONE pH~7; B HNO3 pH<2; C H2SO4 pH<2; D 1+1 HCl pH<2; E NaOH pH>12; F ZnAc/NaOH pH>9; G MeOH; H Other

Container Type (corresponds to Container Packing List): 1 1 3 5 6 15 23

Test Group	Matrix Code	Laboratory Sample Number	#	Sample ID	Cooler ID	Sample Date	Sample Time		Matrix		Number of Containers Submitted	Total	Sample Comments
01		01	1	MW-2	1213	3-5-08	1445	X	AG	X	2	2	
03		02	2	MW-11	"	3-5-08	1700	X	AG	X	2, 1, 1, 1	5	
10		-04	3	MW-14	"	3-6-08	12:45	X	AQ	X	4, 2, 1	7	
			4	MW-14 MS	"	"	12:47	X	AQ	X			
			5	MW-14 MSD	"	"	12:50	X	AQ	X			
11		03	6	MW-24	"	"	14:40	X	AQ	X	2, 2, 1, 1, 1, 1	2	
			7										
			8										
			9										
			10										

Sampled By (print): P. RILEY / E. HAMMERLY
Sampler's Signature: [signature] / [signature]
Company:

How Shipped? ☒ Hand Carrier ______
Tracking No.

Comments:

1. Relinquished By	Date	Time	2. Relinquished By	Date	Time	3. Relinquished By	Date	Time
[signature]	3-6-08					[signature]	3-6-08	1830
1. Received By	**Date**	**Time**	**2. Received By**	**Date**	**Time**	**Received For Lab By**	**Date**	**Time**
[signature]	3-6-08	1630				S. Nordin	3-6-08	18:30

ENTACT

Appendix C

Appendix C

ATTACHMENT 3

BASELINE ECOLOGICAL RISK ASSESSMENT

BASELINE ECOLOGICAL RISK ASSESSMENT
JCI FORMER STANLEY TOOL WORKS
FOWLERVILLE, MICHIGAN

Prepared by

ENTACT Environmental Services, LLC

March 2008

Baseline Ecological Risk Assessment
JCI Former Stanley Tool Works
Fowlerville, Michigan

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Baseline Ecological Risk Assessment
JCI Former Stanley Tool Works
Fowlerville, Michigan

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APPENDIX

1.0 INTRODUCTION AND OBJECTIVES

This Baseline Ecological Risk Assessment (BERA) has been prepared in response to the United States Environmental Protection Agency (U.S. EPA), Region 5 December 1, 2006 Final Decision and Response to Comments, Selection of Remedial Alternative for Johnson Controls, Inc. (Former Stanley Tools Facility) Fowlerville, Michigan (Site). The Site is a former manufacturing facility located at 425 Frank Street in Fowlerville, Michigan. Prior operations conducted at the Site between 1949 and 1985 have resulted in releases of chemical contaminants into the environment on and near the Site.

This objective of the BERA is to support the implementation of the selected remedy for sediments in the Middle Fork o the Red Cedar River, which is forms the western boundary or the site. Areas of river sediments that are contaminated at levels considered unsafe for aquatic animals would be removed from the river. The degree of cleanup in the river sediments is based on the goal of protecting the animals that live part or all of their lives in the sediment (benthic organisms), which are important in the food chain of the river's ecosystem. Cleaning up sediments to protect benthic rganisms is expected to benefit the fish, birds, and mammals that inhabit or feed in the river. This will also keep the surface water clean. To meet this objective, the BERA:

- Evaluates contaminant levels in Red Cedar River sediment;
- Assesses the toxicity of sediments to benthic organisms (macroinvertebrate) through bioassays and community studies; and
- Utilizes results of the BERA and previous site investigation data to isolate the areas of sediment that will be removed and to establish site-specific cleanup goals

The cleanup levels determined by the BERA, and approved by the USEPA, will then be used to determine the degree of removal required for sediments at the Site based on the sediment data collected to date at the Site. A Final Corrective Measures Work Plan will be submitted to the USEPA for approval outlining the removal activities for sediments in the Red Cedar River and defining the long-term groundwater monitoring for the Site as required under the Final Decision.

1.1 BERA APPROACH

The methodology used to currently assess the potential ecological risks to benthic invertebrate communities in the Red Cedar River draws upon guidance set forth in the following documents:

- *Framework for Ecological Risk Assessment* (EPA, 1992a)
- *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments - Interim Final* (EPA, 1997)
- *Sediment Classification Methods Compendium* (EPA, 1992b)

The EPA's *Framework* document (1992a) defines an ecological risk assessment (ERA) as a process that evaluates the likelihood that adverse ecological effects are occurring or may occur as a result of exposure to one or more stressors. This document provides the basic process and principles to be used in an ERA, which include problem formulation, analysis (including characterization of exposure and characterization of effects), and risk characterization. The EPA (1997) has developed an eight-step ERA process for Superfund that is based on this ecological risk assessment framework. The eight steps are:

- Step 1: Screening Level Problem Formulation and Ecological Effects Evaluation
- Step 2: Screening Level Preliminary Exposure Estimate and Risk Calculation
- Step 3: Baseline Risk Assessment Problem Formulation
- Step 4: Study Design and Data Quality Objectives
- Step 5: Field Verification of Sampling Design
- Step 6: Site Investigation and Analysis of Exposure and Effects
- Step 7: Risk Characterization
- Step 8: Risk Management

Steps 1 and 2 in the assessment are considered the screening level ecological risk assessment (SLERA) and are intended to allow a rapid determination that a site poses no or negligible risks, or to identify which contaminants of potential concern and which exposure pathways require further evaluation. The SLERA process has been completed by Earth Tech/Weston and is described in the Technical Memorandum (ET/W, 2004). The Technical Memorandum concluded that the only potentially complete exposure pathway for which applicable criteria are exceeded is protection of aquatic life from residual contaminants in sediments and further assessment of potential risks posed by the residual contaminants to benthic invertebrate communities was needed.

Steps 3 through 7 in the framework process are a more detailed version of the ecological risk assessment framework, and these are the steps that were followed for preparing the BERA for the Site. The following subsections present the steps performed for this BERA, following EPA Region 5 guidance (EPA, 2005a).

1.2 REPORT ORGANIZATION

This report consists of the following sections:

- Section 1: Introduction – This section presents an introduction to the site, objectives, approach, and the organization of the report.
- Section 2: Site Characteristics – This section presents the site description and describes site-specific field investigations conducted to support the BERA.
- Section 3: Problem Formulation – This section presents the first four required elements of BERA: the chemical of concern (COC) screening analysis, an exposure pathway analysis, a conceptual exposure model, and a COC fate and transport analysis. Assessment and measurement endpoints are also selected.
- Section 4: Ecological Investigations – This section presents a description of the field studies performed to support the BERA, which included sediment and surface water sampling, laboratory bioassays, tissue sampling, and community studies.
- Section 5: Characterization of Exposure and Ecological Effects – This section presents the characterization of exposure, which identifies the magnitude and frequency by which target receptors are exposed to COPECs that have migrated or that may potentially migrate via complete exposure pathways to the ecological habitat at the site. This section also presents information on the toxicity of the COPECs to ecological species, including bioassays/toxicity assessment and bioaccumulation studies.
- Section 6: Risk Characterization – This section presents the risk estimation and risk description which integrates the information from the problem formulation and the exposure and ecological effects characterizations to estimate the nature and extent of potential ecological risk. This section also summarizes those factors that significantly influence the risk results, evaluates their range of variability, and assesses the contribution of these factors to the under- or over-estimation of risk.
- Section 7: References.

All tables and figures presented in this report are located at the end of each respective section.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

The Site, located at 425 Frank Street in Fowlerville, Michigan, occupies approximately 14 acres immediately west of the intersection of Frank Street and Veterans Drive (**Figure 2-1**). The Site is bordered on the east by Veterans Drive and commercial/light industrial operations, to the north by Grand River Avenue and a construction company, to the west by the Red Cedar River, and to the south by rail lines of the CSX Railroad.

Buildings associated with the prior manufacturing operation were demolished in 1993. In 2003, an Interim Corrective Action was conducted which consisted of removal of approximately 84,000 tons of soils and ditch sediments containing constituents of concern in excess of Michigan's Part 201 cleanup criteria. In 2005, the eastern five acres of the Site was sold to American Compounding Specialties, LLC. An industrial building has been constructed on the eastern side of the Site with proposed plans for expansion in May 2008. At the time of the 2007 ecological investigation, this building was occupied by American Compounding.

Historically, surface water drainage flowed from the Site to the neighboring Red Cedar River via sheet flow or through two drainage ditches, referenced as the North Ditch and the South Ditch, located along the northern and southern borders of the Site, respectively. Forested and wetland areas had occupied the northwestern portion of the Site, As part of Corrective Measures activities in 2003, a wetlands area was constructed in this portion of the Site. In addition, a small wetlands has been constructed in the southwest portion of the Site between the new building and the river; a small swale connects this small wetlands area to the River.

2.2 SITE HISTORY

In 1949 the Utilex Manufacturing Company first developed the site for zinc die casting operations. The plant underwent several expansions and ownership transfers between 1949 and 1980. Stanley Tool purchased the plant to make hand tools in 1980. Various plating operations continued at the site until 1985. Plating operations produced a variety of liquid waste and sludges that were treated on site using multiple treatment/holding pits and/or lagoons. Several known spills and releases of waste were documented over the years that resulted in contamination of several areas of the site. Wastes were known to have been discharged onto the surface at various locations and two drainage ditches connected to the Red Cedar River adjacent to the site. The plant was closed in 1985 and remained unused until 1993 when building demolitions were completed. Johnson Controls, Inc (JCI) assumed responsibility for site cleanup efforts with the purchase of Stanley Tools.

Several environmental activities were performed at the site between 1988 and 2002 including soil and water investigation sampling and analysis. A RCRA Facility Investigation (RFI) and Interim Measures (IMs) were implemented to address immediate threats to human health and the environment, and to define the nature and extent of contaminated media. These activities were summarized in a RFI Report prepared by URS and submitted to the U.S.EPA in October 2001. In October 2002, the U.S. EPA submitted comments on the RFI, along with a draft Administrative Order of Consent (AOC).

Through negotiations with U.S.EPA, a performance-based AOC was executed for the site in December 2002. The AOC required corrective measures be performed as necessary to control current human exposure to contamination at or from the site to within acceptable risk levels. Documentation of control was to be in the form of an Environmental Indicators Report (EIR) describing interim measures performed to meet the requirements of the AOC. In addition, JCI was required to submit a Final Corrective Measures Proposal (FCMP).

In 2003, an extensive interim Corrective Measures action was conducted by ENTACT and ET/W. This action entailed the removal and off-Site disposal of approximately 84,000 tons of soils and sediments impacted by trichloroethane (TCE), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and various heavy metals. The contaminated soil and sediment was removed from various locations across the site and from the North Ditch and South Ditch which feed in to the adjacent Red Cedar River.

The FCMP (*Final Corrective Measures Proposal, Former Stanley Tool Works, Fowlerville, Michigan, Earth Tech/Weston, February, 2004*) included recommendations for final corrective measures to be implemented and also discussed corrective measures taken at the site since the date of the AOC. The FCMP included Appendix D - *Technical Memorandum: Preliminary Sediment Cleanup Criteria and Data Evaluation, Red Cedar River, Former Stanley Tool* (ET/W, 2004). The Technical Memorandum included a conceptual site model identifying relevant exposure pathways, summary and evaluation of Red Cedar River sediment investigations completed in 1994 and 2000 as part of the *RCRA Facility Investigation,* results of investigations completed by Earth Tech/Weston in 2003, and provided conclusions and recommendations for management of sediment in the Red Cedar River.

In December 2006, USEPA issued a RCRA Final Decision and Response to Comments that specified Selected Remedies for the Site. The Final Decision required removal of sediments that pose a potential risk to aquatic life in order to render the exposure pathways incomplete. The Final Decision indicated that an evaluation of Red Cedar River sediments should be done to further evaluate the level of toxicity to those animals that live all or part of their lives in the sediment (benthic organisms) in order to establish site-specific cleanup goals that would be used to identify those areas of sediment that need to be removed.

The Final Decision reflects the recommendations presented within the *Technical Memorandum* (ET/W, 2004) for additional ecological testing to ensure that contaminants were not present in the stream at levels deemed harmful to aquatic life, and to define the areas with exceedences falling between preliminary screening criteria, specifically the Threshold Effect Concentrations (TECs), defined as concentrations below which adverse effects are not expected to occur ,and Probable Effect Concentrations (PECs), defined as concentrations above which adverse effects are expected to occur.

Under the December 2006 Final Decision, the Agency acknowledges that the source of any future contamination entering the Red Cedar River has been removed through the removal of Site soils and the North and South Ditch sediments as part of the Interim Corrective Measures action. In addition, the migration of residual contaminants in groundwater is considered to have stabilized and is under control. Discharge of residual contaminants into the Red Cedar River were found to be currently acceptable as demonstrated by groundwater-surface water mixing calculations and a comparison of the calculated surface water concentration to applicable surface water protection criteria per the *CA 750 Migration of Contaminated Groundwater Environmental Indicator (EI) Determination.* However, the Agency is requiring that sediments with contaminants at levels considered unsafe for aquatic animals would be removed from the river, via the application of site-specific sediment clean-up goals that are established by this BERA.

2.3 ECOLOGICAL DESCRIPTION

The area addressed by the ecological field investigation (Study Area) encompassed an approximate 4,400 foot stretch of the Middle Branch of the Red Cedar River near Fowlerville, Michigan extending from Interstate 96 northward to approximately 50 feet downstream of the northwest corner of the Site.

The Red Cedar River is classified by the Michigan Department of Natural Resources as a small warm water stream, meaning it is capable of supporting warm water fish (ET/W, 2004). The River is too shallow to be navigated safely by most water craft and not attractive for swimming or other recreational activities. There is no indication that it supports a significant sports fishery. The River is not used as a potable water supply.

The River borders the western edge of the Site for a total of approximately 725 stream feet, extending from the CSX railroad bridge crossing downstream in a northwesterly direction to a point approximately 50 feet downstream from the confluence with the North Ditch. This section of the River consisted of a shallow, channelized run averaging 26.6 feet in width and 21.8 inches (1.8 feet) in depth[a] at the time of sampling. The bottom sediments consisted largely of silty sands with varying amounts of gravel. A thin surficial layer of plant detritus, organic material and/or silt was generally present. The riparian borders were characterized by a narrow band of exposed soils/sediments ranging from gentle flats to severely sloping edges. No emergent vegetation was present. No riffle and no backwater areas were present. Some overhanging vegetation was present in localized areas of the bank. On the east side of the river, the bordering habitat was largely grasses and forbs, with some small saplings of willow (*Salix*), poplar (*Populus*) and green ash (*Fraxinus pennsylvanica*). Large silver maples (*Acer saccharinum*) were present near the northern end of the stretch around the confluence of the North Ditch. The west side of the river was bordered by a mature deciduous, multi-storied, bottomland forest dominated by silver maple, with some box elder maple (*Acer negundo*), green ash, birch (*Betula*) and elms (*Ulmus*).

The section of the river extending from Interstate 96 downstream to the CSX Railroad bridge was selected for the collection of reference samples. This section of the river was a shallow, somewhat meandering run that flows through a fairly extensive mature, multi-storied, deciduous bottomland forest, dominated by silver maple, with green ash, elm, and hop hornbeam (*Ostrya virginiana*). The width and depth of the river at the two reference sample locations averaged 22.75 feet wide and 13 inches (1.1 foot) deep, respectively, at the time of sampling. An open water pond, marshlands, and with some bordering swampland were interspersed within the forested area east of this stretch of the river.

The bottom sediments in this stretch of river consist primarily of largely silty sands and gravel, although a localized pocket of fine sandy silts was noted. Again, a thin layer of detritus and organics were generally present. The river edges borders were characterized by a generally narrow band of exposed soils/sediments ranging from gentle flats to severely sloping edges. Typically, no emergent vegetation or backwater areas were present. A few shallow riffles areas were observed in this stretch of the river. There was an extensive stretch of shallow riffles with deeper pools in a westerly flowing stretch of the river just north of the Interstate (see Exhibit 1). This riffle area was dominated by floating eel grass (*Valesnaria*), with some emergent arrowhead (*Sagittaria*) (Appendix A, photograph 30).

Incidental observations of wildlife in the Study Area included a large number of frogs, both in the riparian borders of the river throughout the study area, and the pond/marsh/ swamp complex within the bottomland forest east of the river. These included wood frogs (*Rana sylvatica*) and leopard frogs (*Rana pipiens*) (Appendix A, photographs 36 and 37). During

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a Calculated by averaging the three depths measured per station, for all six stations in the run.

the macroinvertabrate community surveys, a total of four specimens of Johnny darter (*Etheostoma nigrum*) were inadvertently caught and released; one each at community survey stations 001 and 002, and two specimens at station 006b. A single specimen of common carp (*Cyprinus carpio*) was observed at Station 008. Near station 003, two small fingerling bass (*Micropterus*) and a few small sunfish (*Lepomis*) were observed. A belted kingfisher (*Megaceryle alcyon*) was observed along the river near station 007. Tracks of raccoon (*Procyon lotor*) and white tailed deer (*Odocoileus viginianus*) were observed along the edges of the river throughout the study area.

ↄ Refer to Subsection 4.4.1 for a description of the community survey locations.

3.0 PROBLEM FORMULATION

Step 3, problem formulation, establishes the goals, breadth, and focus of the BERA. The problem formulation for this site involves identifying whether or not residual site contaminants have migrated or may migrate from the site to receptors in the Red Cedar River. The problem formulation step, and specifically the following tasks, have been completed on a preliminary basis and are included in the FCMP and the Technical Memorandum (ET/W, 2004):

- The environmental setting of the site has been characterized. This has provided a physical and biological description of the site and information on the areas on or adjacent to the site that contain ecological receptors and habitat.
- Complete exposure pathways, which are the paths a constituent takes from its source into the environment and ultimately to a receptor have been identified. As described in the *Technical Memorandum* (ET/W, 2004), concentrations of certain heavy metals and PAHs in the Red Cedar River sediment were found to exceed Probable Effect Concentrations (PEC) sediment screening levels. The PECs are from *Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems* by D. McDonald, C.G Ingersoll and T.A. Berger (Archives of Environmental Contamination and Toxicology, 39, 20-31 (2000)). Benthic macroinvertebrates can potentially be exposed through direct contact and dietary ingestion of site contaminants in sediment.

Based on the preliminary problem formulation, the goal of the BERA can be stated as the protection of the survival, growth, and reproduction of benthic invertebrates. The assessment endpoint, which is defined as explicit expressions of the environmental value that is to be protected (EPA, 1992a), is the survival, growth and reproduction of benthic invertebrate communities.

3.1 CONTAMINANT FATE AND TRANSPORT AND ECOTOXICITY

As described, certain heavy metals, specifically, arsenic, cadmium, chromium, copper, lead, nickel zinc, as well as PCBs, and PAHs, have been detected in sediments collected from the Red Cedar River at concentrations exceeding consensus based sediment quality guidelines (MacDonald *et al.* 2000). The following paragraphs provide a brief summary of the fate and transport properties of the contaminants of concern at this site and the ecotoxicity of these contaminants. These profiles are brief synopsis of the toxicity profiles on the Agency for ATSDR website (http://www.atsdr.cdc.gov/toxpro2.html).

Arsenic is a naturally occurring element widely distributed in the environment. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds. Arsenic cannot be destroyed in the environment and it can only change in oxidation state. Fish and shellfish can accumulate arsenic, but the arsenic in fish is mostly in a form that is not harmful to the fish.

Cadmium is a natural element in the earth's crust. It is usually found as a mineral combined with other elements (e.g., with oxygen as cadmium oxide, etc.). It binds strongly to soil particles. It does not breakdown in the environment, but can change forms. Some cadmium dissolves in water. Fish, plants, and animals take up cadmium in the environment. Cadmium stays in the body for a very long time and can build up from many years of exposure to low levels.

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases. Chromium is present in the environment in several different oxidation states; the most common forms are chromium III and VI. Chromium III is also considered to be an essential nutrient. Chromium has a strong affinity to soil and only a small amount dissolves in water. Fish do not appreciably accumulate chromium in their bodies from water.

Copper and its compounds are naturally present in the earth's crust. In aerobic sediments, copper is bound mainly to organics (humic substances) and iron oxides. However, in some cases, copper is predominantly associated with carbonates. In anaerobic sediments, Cu(II) will be reduced to Cu(I) and insoluble cuprous salts will be formed. It is predominantly in the Cu(II) state. Most of it is complexed or tightly bound to organic matter. Little is present in the free (hydrated) or readily exchangeable form. The combined processes of complexation, adsorption, and precipitation control the level of free Cu(II). The chemical conditions in most natural water are such that, even at relatively high copper concentrations, these processes will reduce the free Cu(II) concentration to extremely low values. Copper shows a low potential for bioconcentration in fish There are limited data suggesting that there is little biomagnification of copper in the aquatic food, with biomagnification ratios less than one.

Lead is a naturally occurring metal which does not break down, but organic lead compounds are change composition due to sunlight, air, and water. Lead has a high affinity to soil and sediment particles. Plants and animals may bioconcentrate lead, but lead is not biomagnified in the aquatic or terrestrial food chain.

Nickel and its compounds are naturally present in the Earth's crust, and releases to the atmosphere occur from natural discharges such as windblown dust and volcanic eruptions, as well as from anthropogenic activities. Surface water contains low nickel levels. Sediment is an important sink for nickel in water. Adsorption of nickel onto suspended particles in water is one of the main removal mechanisms of nickel from the water column. The adsorption of nickel on water-borne particulate matter is in competition with adsorption onto dissolved organic matter, which limits the amount of nickel that can be removed from the water column through the settling of suspended particles. Much of the nickel released into waterways as runoff is associated with particulate matter; it is transported and settles out in areas of active sedimentation such as the mouth of a river. It has been reported that nickel is not accumulated in significant amounts by aquatic organisms. There was no evidence that nickel biomagnifies in aquatic food webs and, in fact, there is evidence to indicate that the nickel concentrations in organisms decrease with increasing trophic level.

Zinc is an element commonly found in the Earth's crust. Zinc is capable of forming complexes with a variety of organic and inorganic groups (ligands). In the aquatic environment, zinc partitions to sediments or suspended solids in surface waters through sorption onto hydrous iron and manganese oxides, clay minerals, and organic material. Biological activity can affect the mobility of zinc in the aquatic environment, although the biota contains relatively little zinc compared to the sediments. Zinc bioconcentrates moderately in aquatic organisms; bioconcentration is higher in crustaceans and bivalve species than in fish. Zinc does not concentrate in plants, and it does not biomagnify through terrestrial food chains.

PCBs are a group of synthetic organic chemicals that can cause a number of different harmful effects. There are no known natural sources of PCBs in the environment. PCBs enter the environment as mixtures containing a variety of individual chlorinated biphenyl components, known as congeners, as well as impurities. Once in the environment, PCBs do not readily break down and therefore may remain for very long periods of time. They can easily cycle between air, water, and soil. PCBs are taken up into the bodies of small organisms and fish in water. They are also taken up by other animals that eat these aquatic animals as food. PCBs especially accumulate in fish and marine mammals (such as seals and whales) reaching levels that may be many thousands of times higher than in water. Greater bioaccumulation will occur in the fatty tissues (lipids) than in the muscle or whole body of aquatic organisms. Thus, organisms with higher lipid concentrations will accumulate a greater burden of PCBs via tropic transfer. PCB levels are highest in animals high up in the food chain.

PAHs are a group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. There are more than 100 different PAHs. PAHs generally occur as complex mixtures (for example, as part of combustion products such as soot), not as single compounds. The movement of PAHs in the environment depends on properties such as how easily they dissolve in water, and how easily they evaporate into the air. Sorption of PAHs to soil and sediments increases with increasing organic carbon content and with increasing surface area of the sorbent particles. In surface water, PAHs can volatilize, photolyze, oxidize, biodegrade, bind to suspended particles or sediments, or accumulate in aquatic organisms (with bioconcentration factors often in the 10-10,000 range). In sediments, PAHs can biodegrade or accumulate in aquatic organisms. In general, bioconcentration was greater for the higher molecular weight compounds than for the lower molecular weight compounds. Although fish and most crustaceans evaluated are able to metabolize PAHs, some mollusks and other aquatic invertebrates are unable to metabolize PAHs efficiently. For example, the extent of benzo[a]pyrene metabolism by aquatic organisms has been ranked as follows: fish > shrimp > amphipod crustaceans > clams. Half-lives for elimination of PAHs in fish ranged from >2 days to 9 days.

3.2 COMPLETE EXPOSURE PATHWAYS AND CONCEPTUAL SITE MODEL

Complete exposure pathways, which are the paths a constituent takes from its source into the environment and ultimately to a receptor have been identified and are presented in the ecological Conceptual Site Model (CSM) provided as **Figure 3-2.**

Based on existing data and conditions at the Facility, the BERA focuses on benthic macroinvertebrates within that portion of the Red Cedar River adjacent to the Site. Benthic invertebrates can be significantly exposed through direct contact and dietary ingestion of heavy metals, PAHs and PCBs in sediment, sediment pore water, and surface water. As indicated in Subsection 2.2, there is no indication that contaminants continue to migrate from Site into the River via any migration pathway, including via surface water or groundwater transport.

3.3 ASSESSMENT AND MEASUREMENT ENDPOINTS

Assessment endpoints, which are defined as explicit expressions of the environmental value that is to be protected (EPA, 1992a) for this BERA are summarized in **Table 3-1**. Elevated levels of heavy metals, PAHs and PCBs in sediment are known to be toxic to benthic organisms; thus, survival of benthic invertebrate communities and toxicity to the benthic invertebrate community are proposed as assessment endpoints for this Site.

A Measurement Endpoint is "a measurable ecological characteristic that is related to the valued characteristic chosen as the assessment endpoint and is a measure of biological effects (e.g., death, reproduction, growth) of particular species, and they can include measures of exposure as well as measures of effects" (EPA, 1997). Measurement endpoints should include risks to, and be representative of, all of the species, populations, or groups included in the assessment endpoint(s) that is/are being investigated in terms of those particular measurement endpoints. The measurement endpoints (as measures of exposure) and the assessment objectives being answered in this BERA are summarized in **Table 3-1.** Receptor(s) of Interest (ROI) are the indicator species for evaluation in the BERA. Based on existing data and known site conditions, the ROI are benthic macroinvertebrates.

Table 3-1
Assessment and Measurement Endpoints
Former Stanley Tool Works Site, Fowlerville, Michigan

Feeding Guild	Assessment Endpoint	Endpoint Objective	Surrogate Species or Community	Measures of Exposure
Benthic organisms	Benthic invertebrates are an important food source for many higher trophic level predators. They also provide an important role as decomposers/detritivores in nutrient cycling. *Assessment endpoint = preservation of the productivity (taxa richness and abundance) of benthic organisms.*	Are COPCs in sediment adversely affecting benthic communities? Are COPCs toxic to benthic organisms? Have COPCs impacted the benthic macroinvertebrate community?	Benthic organisms	Comparison of sediment concentrations with toxicity-based screening values. *Hyallela azteca* 28-day bioassay. Benthic community structure and function assessment and reference area comparison.

4.0 ECOLOGICAL FIELD INVESTIGATION

In Step 4 the measurement endpoints are selected. A measurement endpoint is defined as "a measurable ecological characteristic that is related to the valued characteristic chosen as the assessment endpoint and is a measure of biological effects (e.g., death, reproduction, growth) of a particular species, and they can include measures of exposure as well as measures of effects" (EPA, 1997). Measurement endpoints should include risks to, and be representative of, all of the species, populations, or groups included in the assessment endpoint(s) that is/are being investigated in terms of those particular measurement endpoints. The measurement endpoints (and measures of exposure) addressed in this BERA are:

1) Comparison to sediment concentrations of site constituents to sediment toxicity benchmarks;
2) Evaluation of site-specific toxicity tests; and
3) Evaluation of site-specific community surveys.

Step 4 also entails the production of a Work Plan (WP) and Field Sampling and Analysis Plan (FSAP) to identify the investigative tasks needed to complete the study of risks to ecological resources (i.e., to collect the measures of exposure and measures of effect data). The purpose of the WP is to document the decisions and evaluations made during the previous steps and to identify additional investigative tasks needed to complete the study of risks to ecological resources. The BERA Work Plan (Entact, 2007) was approved by U.S EPA in July 2007.

The BERA WP utilized the Triad Approach, as defined in the *Sediment Classification Methods Compendium* (EPA, 1992b), to further investigate risks, integrating both chemical and biological data. The Triad Approach incorporates measures of sediment chemistry (measures chemical contamination), sediment bioassays (measures toxicity) and benthic communities (measures change in benthic community structure). The data collected as part of the Triad Approach included the following:

- Evaluation of existing sediment data and generation of new sediment data from sediment samples collected from the Red Cedar River adjacent to the site and from the reference areas;
- Bioassay analyses or toxicity tests conducted on sediment samples collected from the Red Cedar River adjacent to the site and from the reference areas; and
- Community evaluation of benthic macroinvertebrates conducted in the field and on samples collected from the Red Cedar River adjacent to the site and from the reference areas.

The following sections provide further detail on the ecological investigation at the site.

4.1 SEDIMENT CHEMISTRY

Based on results of previous investigations and sampling conducted by Earth Tech/Weston in 2003, eight additional sediment samples were collected for chemical analyses. The sample locations included one sample from each of six investigative locations (E2, RC-3/3, A1, C1, RC-9/1 and J2) (6 samples total) which, based on historical data, provide a range of heavy metals and PAH concentrations. These six investigative samples were located in the Red Cedar River adjacent to and/or immediately downstream of the Site. The sample locations are shown on **Figure 4-1.**

Two reference samples were collected in the Red Cedar River in the upstream stretch of the River between Interstate I-96 and Garden Lane. The six investigative samples and one of the reference samples were placed at prior locations of selected sediment samples collected by Earth Tech/Weston in 2003. The second reference sample was placed at a previously un-sampled location in the River. All data collected from the site is compared to a reference area, which is defined as a comparatively uncontaminated site used for comparison to contaminated sites in environmental monitoring studies. The reference area can be the least impacted or an un-impacted area of the site or a nearby site that is ecologically similar, but not affected by the contaminants at the site under investigation. Reference areas for the site were selected that as closely as possible mirror the characteristics of the stretch of Red Cedar River being investigated. Characteristics matched with the investigative surface water features for deciding on reference areas included habitat, species potentially present, sediment characteristics, surface water presence and water depth.

Each sediment sample location was designated in the numerical order in which it was collected; with 001 being the sample point furthest downstream, and the 008 being the sample point furthest upstream. For the seven samples that were located at prior sample locations, the prior sample identifier was used as a prefix to the numerical designation. **Table 4-1** summarizes the sediment samples collected during this effort.

With the exception of sample SD-007, each sample location was located and staked based upon survey coordinates associated with the prior Earth Tech/Weston sampling. Boss Engineering of Howell, Michigan was retained by ENTACT to locate and stake these positions using a combination of global positioning system (GPS) and traditional surveying methodology. Coordinates for the prior Earth Tech/Weston samples were provided electronically by Weston to ENTACT. SD-007 was placed at a previously un-sampled location in the River. Target GPS coordinates for locating this sample were developed using a aerial photograph of the Site. These target coordinates were then used in the field for placing this sample.

At each sample location, sediment material was retrieved form the upper 1 foot of sediments utilizing a decontaminated stainless steel bucket auger. The unconsolidated sediment area is approximately 2 feet deep in most areas and is underlain by a visually distinct and dense sand and silt layer. However, the ET/W tabulated data shows that most samples with PEC or PEC quotient exceedances were collected from the upper 12 inches. This material was placed into a decontaminated stainless steel bowl, homogenized, and then transferred directly to laboratory-supplied, 8-ounce glass jars with Teflon-lined plastic lids. At sediment sample location SD-J2-001, a field duplicate sample was collected by splitting the homogenized sample between two, 8-ounce jars and randomly labeling one as the field duplicate (SD-J2-001-FD).

Each sample container was immediately labeled with the sample location, time and date. The sample containers were placed in an iced cooler upon return to the sampler's vehicles. The samples were subsequently shipped under chain-of-custody via common to TestAmerica (Buffalo Grove, Illinois) for chemical analyses.

ugers, bowls and other non-disposable sampling gear was decontaminated by initially rinsing the equipment in river water and hand scrubbing with disposable paper toweling as necessary to remove visible sediment material, followed by a soapy water (Alconox) spray, followed by a distilled water rinse. Samplers wore dedicated, disposable gloves during sampling activities.

All sediment chemistry samples (eight investigative and one field duplicate) were analyzed for the following chemical constituents:

- Total concentrations of the following heavy metals: arsenic, cadmium, chromium, copper, nickel, lead and zinc via USEPA Methods 6000/7000 series
- PAHs via USEPA Method 8310.
- PCBs via USEPA Method 8082.

In addition, four of the chemistry samples (three investigative and one field duplicate) were also analyzed for total organic carbon (TOC) via Method SW846 9060M. Sample locations were SD-J2-001, SD-J2-001-FD, SE/RC 9/1-002, and SD-A1-006.

Samples were also collected at three locations, SE/RC 9/1-002, SE/RE 3/3-004, and SD-SE/RC 13/1-008, for geotechnical analyses of grain size distribution. At each location, sediment material from the upper foot of the river bed was retrieved and placed into re-sealable, food-grade gallon sized plastic bags. The bags were pre-labeled with the sample location, date and time. Each sample bag was double bagged, and shipped under chain-of-custody in a sample cooler to Wang Engineering (Lombard, Illinois) for analyses.

4.2 BIOASSAY

The bioavailability and harmful effects of site contaminants were tested directly with toxicity tests (bioassays), which measure the effects of a particular contaminant on a particular species.

Sediment bioassays were performed using a chronic study. A 28-day bioassay with *Hyallela azteca* (*H. azteca*) was used to evaluate for acute toxicity and to evaluate for chronic effects. Data from the chronic bioassay is used to determine whether heavy metals, PAHs and PCBs in sediments are directly toxic to benthic invertebrates and this data can also be used for developing site-specific cleanup goals. The *H. azteca* bioassay generally followed the EPA (2000) Test Method 00.4., *Test for Measuring the Effects of Sediment-associated Contaminants on Survival, Growth, and Reproduction.* The procedure for days 29 through 42 of Test Method 100.4 to evaluate reproduction were not completed. The endpoints typically monitored in sediment toxicity tests include survival and growth, which were compared to both the laboratory control and the reference area.

Whole sediment samples were collected at six investigative locations, adjacent to the site as well as from two locations in the upstream reference area. All samples were collected from depositional areas where standing water is present. All bioassay samples were co-located with and collected in conjunction with collection of the chemistry samples described in Subsection 4.1.1. Six investigative the samples were located in the Red Cedar River adjacent to and/or immediately downstream of the Site. Two reference samples were collected in the Red Cedar River in the upstream stretch of the River between Interstate I-96 and Garden Lane. The same sample nomenclature used for the sediment chemistry samples was sued for the bioassay samples.

Sediment material for the bioassay was taken from the homogenized sediment material collected as described in Subsection 4.1. The material was placed in gallon-sized, re-sealable, food-grade plastic bags. Each sample bag was pre-labeled with the sample location, time and date. The sample bags were placed in an iced cooler upon return to the sampler's vehicles. The sample bags were triple bagged and subsequently shipped under chain-of-custody via common carrier to Coastal Bioanalysts (Gloucester, Virginia) which conducted the bioassay testing.

4.3 COMMUNITY SURVEY

Population/community evaluations, or biological field surveys, were performed in the same locations where the bulk sediment samples are collected to identify the benthic macro-invertebrate community. Several variables in combination are effective in characterizing benthic community structure for the Triad Approach (EPA, 1992b): numbers of taxa, numerical dominance, total abundance, and percentage composition of major taxonomic groups (e.g., oligochaetes, chironomids, and other major insect groups).

As described in the BERA Work Plan, a community survey of benthic macro-invertebrates was conducted. This effort was conducted by Integrated Lakes Management, Inc. (ILM) of Gurnee, Illinois, with field assistance by ENTACT. The survey entailed collecting representative samples of macro-invertebrate fauna from six investigative and two reference locations or survey stations within the Red Cedar River. The locations of the survey stations were generally co-located with a few feet of the sediment sample locations described in Subsections 4.1.1 and 4.1.2, and were identified in numerical order starting with the furthest downstream location. Thus, station 01 was located near sediment sample SD-J2-001, station 02 near SE/RC 9/1-002, and so forth. The specific locations of each station were selected so that each station represented similar stream habitat. The selected habitat consisted of stream runs with with no riffles or backwater areas, no large rocks or debris, no submerged or emergent aquatics, and with riparian borders consisting of a narrow band of exposed soils/sediments ranging from gentle flats to severely sloping edges. While most of the stations were located within 20 to 30 feet of the corresponding sediment sample location, reference station 08 was actually located approximately 600 stream-feet downstream of sediment sample SE/RC 13/1-008. At this sediment sample location, which was collected approximately (10) feet downstream of the north edge of the culvert extending beneath Interstate 96, a large amount of rip-rap had been placed along the eastern bank; this rip-rap extended downstream past the 90-degree turn to the west that the river takes just downstream of where sediment sample was collected. As noted in Subsection 2.4, the westerly flowing section of the river just past this turn consisted of a riffle and deep pool areas, the former populated by an extensive colony of eel grass and other submerged//emergent aquatics. The first section of river of comparable habitat to the other stations was found after a second river bend where the river resumes a more northerly course.

At each sample station, a total of three samples, one mid-stream, and two approximately midway between the mid-point and either bank were collected. Each sample was collected using a 1-square foot Surber net. Once placed, shallow sediments (extending to approximately 3 centimeters in depth) within the nets frame were disturbed by hand action. Any large twigs or rocks encountered in the sample frame were rubbed to dislodge attached organisms. The contents of net were then washed to remove fines from the sample mass. The sample was then deposited into a white enamel pan or bowl. An initial examination of the sample was made and any larger macro-fauna removed. The sample was then placed into a kitchen strainer held within a #35 standard soil sieve. The sample was then rinsed with copious amounts of river water. The larger material held by the kitchen strainer was then placed into a white colored pan bowl. The finer material held by the soil sieve was placed into a second white pan or bowl. Each sub-sample was thoroughly examined and any macro-fauna removed and preserved. After examination, the coarse material was discarded. The fine material was placed into a second jar and preserved, for additional examination in the laboratory. The specimens collected were placed into sample containers dedicated for each station, resulting in a composite sample of the three Surber net samples collected at each station.

Casual observations of biota made during the community survey revealed larval mayfly and caddisflies on concrete block debris located between community stations 04 and 05. ILM subsequently collected and identified macro-invertebrate samples from this debris, and included the results of this collection effort into their final report (refer to Subsection 4.4.2). However, this data are not part of the comparative community survey and is strictly observational in nature.

At each station, measurements of the river depth and width were taken. Also, samples were collected for temperature, and field screening of alkalinity, pH, dissolved oxygen and chlorides using Hach® test kits at Stations 02 and 07. A summary of field measurements of the river collected during the community survey are presented in **Table 4-2.** A summary of wet chemistry field analyses conducted by ILM at Stations 02 and 07 are presented in **Table 4-3.**

TABLE 4-1
SUMMARY OF SEDIMENT SAMPLE LOCATIONS

Sample Designation	Sample Location
SD-J2-001	Approximately 50 stream-feet downstream of North Ditch confluence
SE/RC 9/1-002	Approximately 5 stream-feet downstream the North Ditch confluence
SD—E2-003	Approximately 440 stream-feet upstream of North Ditch confluence.
SE/RE 3/3-004	Approximately 480 stream-feet upstream of North Ditch confluence.
SD—C1-005	Approximately 110 stream-feet downstream of CSX Rail Bridge
SD-A1-006	Approximately 60 stream-feet downstream of CSX Rail Bridge.
SD-007	Approximately 1,700 stream-feet downstream of sample point SD-SE/RC 13/1-008.
SD-SE/RC 13/1-008	Approximately 15 stream-feet downstream of north edge of culvert beneath Interstate I-96.

TABLE 4-2
SUMMARY OF RIVER MEASUREMENTS

Station	River Width (feet)	River Depth (feet)		
		A (east)	B (mid-stream)	C (west)
01	28.5	0.9	1.2	1.5
02	23	1.2	1.8	1.8
03	24	2.4	2.2	1.7
04	26	1.8	1.7	1.2
05	26	1.3	2.3	2.1
06	27	2.2	3.7	2.0
07	25.5	0.7	0.8	0.8
08	20	1.3	1.6	1.3

TABLE 4-3
SUMMARY OF FIELD WATER CHEMISTRY PARAMETERS

Station	Temperature (Celsius)	Alkalinity (mg/L as $CaCO_3$)	pH	Dissolved Oxygen (mg/L)	Chlorides (mg/L Cl^-)
02	19	320	8.0	7.0	100
07	20	360	8.0	6.0	80

5.0 CHARACTERIZATION OF EXPOSURE AND EFFECTS

The extent of ecological exposure and effects are characterized in this section. Exposure is the situation where a contaminant (stressor) is present at the same place and time as, or is in contact with, a plant or animal. Both an exposure-response analysis, which describes the relationship between size, frequency, or duration of a chemical contaminant and the size of the response, and evidence of causality, which provides evidence for this relationship from multiple sources and not just the exposure-response analysis, will be used in determining how likely it is that the contaminant found in the Red Cedar River sediments actually cause the effects on the measurement and assessment endpoints.

5.1 CHARACTERIZATION OF EXPOSURE (DATA ANALYSIS)

The results of the ecological field investigations are provided in this subsection. For the sediment chemistry, EPA Region 5 RCRA Corrective Action ecological screening levels (ESLs), available at http://www.epa.gov/Region5/rcraca/edql.htm, are first used to determine chemicals of potential ecological concern (COPECs) in these media. The ESLs are Region 5 media-specific values for Resource Conservation and Recovery Act Appendix IX hazardous constituents. ESLs are initial screening levels with which the sediments concentrations were compared to helping to focus the investigation on those areas and chemicals that are most likely to pose an unacceptable risk to the environment. ESLs alone are not intended to serve as cleanup levels. The Region 5 RCRA ESL is equivalent to the Consensus based threshold effect concentrations (TEC) as presented in MacDonald *et al.* (2000).

5.1.1 Sediment Chemistry

Sediments encountered at each sampling location consisted largely of silty sands and gravel with some localized fine sandy silts. A thin layer of detritus and organics were generally present. At sample location SD-E2-003, the sediments possessed a distinct oily odor, and an oily sheen was noted atop the water after these sediments had been disturbed (Appendix A, photograph 13).

The results of the chemical analyses of the sediment samples are presented in **Tables 5-1** for sediment. Historic sediment data is provided in **Appendix B**. Sediments were analyzed for metals (i.e., arsenic, cadmium, chromium, copper, lead, nickel, and zinc), PCBs (as Aroclors), and PAHs (priority pollutants). Of the organic compounds, PCBs and cadmium were not detected in sediment. Of the PAHs, only benzo(a)pyrene was detected in four samples at concentrations below the ESL. Arsenic, chromium, copper, lead, nickel, and/or zinc exceeded the ESL in at least one sample at four locations

(SE/RC-9/1-002, SD-E2-003, SD-C1-005, and SD-A1-006.

5.1.2 Bioassays

Benthic organisms were exposed to sediment in order to evaluate the effects of contamination on the survival and growth of these organisms. The results of the benthic bioassays are summarized in **Table 5-2.** The complete bioassay report is provided in **Appendix C.** The laboratory negative control survival was 94%. One sample location (SD-E2-003) had no survival; survival for all other investigative locations (91% at SD-A1-006, 96% at SE/RE 3/3-004, 91% at SE/RC 9/1-002, 79% at SD-C1-005 and 95% at SD-J2-001) and the reference locations (95% in SE/SRC 12/1-008, and 94% in SD-007) was not significantly different from the laboratory control survival rate of 94%. Results from sample SD-C1-005 showed a markedly lower survival rate of 79%, though the difference was not significant. Results from sample SD-E2-003 showed a zero percent survival rate. Growth at SD-C1-005 and reference site SE/RC-13/1-008 was significantly different ($p=0.005$) from reference site SD-007. Growth in all treatments was significantly lower than in the laboratory control group.

5.1.3 Community Studies

The ecological investigation included collection of aquatic macroinvertebrates for analysis of community health. The complete macroinvertebrate a community study report is provided in **Appendix D.**

Several variables in combination are effective in characterizing benthic community structure (EPA, 1992b): numbers of taxa, numerical dominance, total abundance, and percentage composition of major taxonomic groups (e.g., oligochaetes, chironomids, and other major insect groups). Aquatic macroinvertebrates for community assessment analysis were generally identified to the family level in the field. Twenty-one taxa were identified for the area. The results of the benthic community study performed by ILM are summarized in **Tables 5-3 and 5-4.**

5.2 CHARACTERIZATION OF EFFECTS

Sometimes more than one line of evidence is needed to reasonably show that contaminants from a Site are likely to cause adverse effects on the assessment endpoint(s). The BERA Work Plan identified the triad approach (i.e., toxicity test, benthic invertebrate community survey, and sediment chemistry) for collecting data for the BERA to assess the potential for adverse ecological effects on the aquatic ecosystem present in the Red Cedar River in the vicinity of the site.

5.2.1 Sediment Chemistry

One line of evidence used to assess impacts to transient aquatic receptors is the comparison of chemical data to sediment guidelines. To predict the toxicity for mixtures of various contaminants in sediments, mean probable effect concentration quotients (PEC-Q) were determined for each sample location. Consensus-based sediment quality guidelines (SQGs) (MacDonald *et al.* 2000) have been developed that represent the geometric mean of published SQGs from a variety of sources. These SQGs are called PECs and TECs. PECs are intended to identify contaminant concentrations above which harmful effects on sediment-dwelling organisms are expected to occur more often than not. TECs are intended to identify contaminant concentrations below which harmful effects on sediment-dwelling organisms are not expected. Mean PEC-Q for mixtures of metals) were determined using methods adopted from Ingersoll *et al.* (2000, 2001). The mean PEC-Q is a calculated value which provides a method for evaluating the significance of the mixture of chemicals (with PECs) in a sample instead of a chemical by chemical evaluation which is a more restrictive screening evaluation and addresses the EPA's concern of evaluating cumulative effects. Based on existing databases, the reliability to predict toxicity is greatest for the metals arsenic, cadmium, chromium, copper, lead, nickel, and zinc. In the case of metals, a mean PEC-Q_{metals} is calculated by summing the PEC-Q for the individual metals and dividing by the total number of metals. Ingersoll *et al.* (2000) observed an overall increase in the incidence of toxicity with an increase in the mean quotients in toxicity tests, and that there is a consistent increase in the toxicity at a mean quotient of > 0.5. The overall incidence of toxicity was greater in long-term tests (28 days) using the amphipod *Hyalella azteca* compared to short-term tests.

5.2.2 Bioassays

Toxicity tests or bioassays are used to directly evaluate the bioavailability and toxicity of sediment contaminants to selected test organisms (EPA, 1997). Sediments having ≤24% mortality are considered nontoxic as defined by Berry et al. (1996, and cited in EPA 2005b). As described in EPA (2000), the performance of bioassay test organisms in the negative control is used to judge the acceptability of the test, and both a negative control and reference sediment were used to evaluate performance of the organisms in the investigative sediments. Testing of a reference sediment provides a site-specific basis for evaluating toxicity while the negative control is used as a measure of test acceptability, evidence of test organism health, and a basis for interpreting data obtained from the test sediments. If the organisms in the negative control do not meet performance criteria, the results of investigative sediments are considered questionable because it suggests that adverse factors affected the test organisms.

5.2.4 Community Studies

Population/community evaluations, or biological field surveys, can be useful for evaluating the potential for adverse cological effects from both contaminants that are harmful to organisms through direct exposure to the contaminated medium (sediment) and contaminants that bioaccumulate in food chains.

The benthic macroinvertebrate family-level data collected from the Red Cedar River site is useful to assess the benthic communities of the investigated locations. The taxa lists were developed based on qualitative sampling, with a frequency of occurrence estimated for the sampled taxa at the time of collection. This information is appropriate for developing qualitative assessments of the benthic communities. ILM developed Macroinvertebrate Biotic Index (MBI) values for the sampled locations associated with the site as a measure of organic, oxygen-depriving pollution in stream environments. The MBI is a refinement of the Hilsenhoff Biotic Index (HBI, Hilsenhoff, 1982, 1987, 1988), which has been refined for use on the taxonomic family level. This procedure, developed by Hilsenhoff (1982, 1988) for Wisconsin streams, is a semi-quantitative assessment of organic, oxygen-depleting pollution of flowing waters. The HBI system assigns a tolerance value (of low oxygen and high organic waste levels) to aquatic arthropod species found in flowing waters. A higher HBI value, on a scale of 0 to 10, indicates a higher tolerance of low dissolved oxygen and high organic pollution conditions.

Implementing the HBI system initially required counting organisms to a 100-count, a semi-quantitative analysis. The HBI count has since been modified to count a maximum of 10 organisms of each encountered taxon. This approach limits bias due to dominance effects of one or two species in a sample (Hilsenhoff, 1998). Using the maximum 10-count per taxon, ILM developed MBI values for all of the benthic sampling locations associated with the Site. The MBI values developed for the Site can be used to compare the sampling locations with each other. This table also shows the results of applying the MBI tolerance values for aquatic macroinvertebrate families based solely on organism presence. This approach is a qualitative assessment, resulting in Tolerance Biotic Index (TBI) values, used by the Wisconsin Department of Natural Resources (Lillie and Schlesser, 1994). The TBI is the average tolerance value for the taxa-assigned tolerance values in a sample.

Other metrics were also applied to the project's benthic community data (as presented in MDEQ *Qualitative Biological and Habitat Survey Protocols for Wadable Streams and Rivers* (Procedure 51, Revised May 2002), including:

> **Metric 1. Total Number of Taxa.** This is the total number of taxa identified. Taxa richness has historically been a key component in most all evaluations of macroinvertebrate community integrity. The underlying reason is the basic ecological principle that healthy, stable biological communities have high species diversity. Increases in number of taxa are well documented to correspond with increasing water quality and habitat suitability. Small, pristine headwater streams may, however, be exceptions and show low taxa richness.
>
> **Metric 2. Total Number of Mayfly Taxa.** This is the number of taxa in the order Ephemeroptera. Mayflies are an important component of a high quality stream biota. As a group, they are decidedly pollution sensitive and are often the first group to disappear with the onset of perturbation. Thus, the number of taxa present is a good indicator of environmental conditions.
>
> **Metric 3. Total Number of Caddisfly Taxa**. This is the number of taxa in the order Trichoptera. Caddisflies are often a predominant component of the macroinvertebrate fauna in larger, relatively unimpacted streams and rivers but are also important in small headwater streams. Though tending to be slightly more pollution tolerant as a group than mayflies, caddisflies display a wide range of tolerance and habitat selection among species. However, few species are extremely pollution tolerant and, as such, the number of taxa present can be a good indicator of environmental conditions.
>
> **Metric 4. Total Number of Stonefly Taxa.** This is the number of taxa in the order Plecoptera. Stoneflies are one of the most sensitive groups of aquatic insects. The presence of one or more taxa is often used to indicate very good environmental quality. Small increases or small declines in overall numbers of different stonefly taxa is thus very critical for correct evaluation of stream quality.
>
> **Metric 5. Percent Mayfly Composition.** This is the ratio of the number of individuals in the order Ephemeroptera to the total number of organisms collected. As with the number of mayfly taxa, the percent abundance of mayflies in the total invertebrate sample can change dramatically and rapidly to minor environmental disturbances or fluctuations.
>
> **Metric 6. Percent Caddisfly Composition.** This is the ratio of the number of individuals in the order Trichoptera to the total number of organisms collected. As with the number of caddisfly taxa, percent abundance of caddisflies

is strongly related to stream size with greater proportions found in larger order streams. Optimal habitat and availability of appropriate food type seem to be the main constraints for large populations of caddisflies.

Metric 7. Percent Contribution of the Dominant Taxon. This is the ratio of the number of individuals in the most abundant taxon to the total number of organisms collected. The abundance of the numerically dominant taxon is an indication of community balance. A community dominated by relatively few taxa for example, would indicate environmental stress, as would a community composed of several taxa but numerically dominated by only one or two taxa.

Metric 8. Percent Isopods, Snails, and Leeches. This is the ratio of the sum of the number of individuals in the order Isopoda, class Gastropoda, and class Hirudinea to the total number of organisms collected. These three taxa, when compared as a combined percentage of the invertebrate community, can give an indication of the severity of environmental perturbation present. These organisms show a high tolerance to a variety of physical and chemical parameters. High percentages of these organisms at a sample site are very good evidence for stream degradation.

Metric 9. Percent Surface Dependent. This metric is the ratio of the number of macroinvertebrates which obtain oxygen via a generally direct atmospheric exchange, usually at the air/water interface, to the total number of organisms collected. High numbers or percentages of surface breathers may indicate large diurnal dissolved oxygen shifts or other biological or chemical oxygen demanding constraints. Areas subject to elevated temperatures, low or erratic flows may also show disproportionately high percentages of surface dependent macroinvertebrates.

6.0 RISK CHARACTERIZATION

Risk Characterization (Step 7) is the final step of the BERA process and includes two major components: risk estimation and risk description. Risk characterization combines the results of the studies performed to produce an estimate of the ecological risk and describe that risk in terms of extent, future potential for risk, how long might contamination remain, and what are the prospects of natural recovery if no action is taken.

6.1 Risk Estimation

Since the Triad approach (i.e., toxicity test, benthic invertebrate community survey, and sediment chemistry) has been used to evaluate contaminated sediments, the risk estimation section describes how theses studies are integrated to draw conclusions about risk. Lines of evidence that were used to characterize risk in this BERA include:

- Comparing estimated or measured exposure levels for a particular chemical against screening levels that are known from the literature to be toxic to the benthic macroinvertebrates selected as assessment endpoints;
- Comparing observed effects in the benthic macroinvertebrate communities associated with the site with benthic macroinvertebrate communities at a reference area; and
- Comparing laboratory tests (bioassays) with sediment from the site and from a reference site.

6.1.1 Sediment Chemistry

Table 6-1 presents a comparison of all results to TEC and PEC values. TEC values were exceeded at four sample locations (SE/RC-9/1-002, SD-C1-005, SD-A1-006, and SD-E2-003), and PEC values were exceeded at three locations (SD-C1-005, SD-A1-006, and SD-E2-003). The sediment chemistry data at each sample location has been assessed through the use of the mean PEC-Q to predict the toxicity for mixtures of various contaminants in sediments. Ingersoll *et al.* (2000) observed an overall increase in the incidence of toxicity with an increase in the mean quotients in toxicity tests, and that there is a consistent increase in the toxicity at a mean quotient of > 0.5. The mean PEC-Q for the Red Cedar River ranged from to 0.026 at reference location SD-007 to 1.59 at SD-E2-003 (**Table 6-2**). A mean PEC-Q over 0.5 was found at SD-E2-003, SD-C1-005, and SD-A1-006. The primary contaminants contributing to the elevated mean PEC-Q were lead and chromium at SD-E2-003, nickel and zinc at SD-C1-005, and chromium, nickel and zinc at SD-A1-006.

MacDonald *et al.* (2000) also looked at the predictive ability of the CBSQGs, examining an existing database to determine the relationships between the degree of chemical contamination and probability of observing toxicity in freshwater sediments. MacDonald et al. found that subsequent curve-fitting indicated that the mean PEC-quotient is highly correlated with incidence of toxicity ($r^2 = 0.98$), with the relationship being an exponential function. The resulting equation ($Y = 101.48\ (1-0.36^X)$) can be used to estimate the probability of observing sediment toxicity at any mean PEC quotient. The mean PEC-Q are predicted to result in >50% toxicity at locations SD-E2-003, SD-C1-005, and SD-A1-006.

Thus, based on sediment chemistry, there is risk to benthic invertebrate community at three locations within the Red Cedar River (SD-E2-003, SD-C1-005, and SD-A1-006). Location SD-E2-003 is approximately 440 feet upstream of the North Ditch Confluence (along the north or downstream edge of the Site), while samples SD-A1-006 and SD-C1-005 are approximately 60 feet and 110 feet respectively, downstream of the CSX rail bridge. All three samples are located downstream of the south ditch (previously located at the upstream edge of the site) and are adjacent to the former developed portion of the site.

o.1.2 Bioassays

Whole sediment toxicity tests were conducted using *H. azteca*. Six site sediment samples, two reference samples, and a control sediment sample were used in the 28-day whole sediment toxicity tests conducted with *H. azteca*. The laboratory negative control survival was 94%, which meets the endpoint having at least 70% survival in the control.

Results from sample SD-E2-003 showed a zero percent survival rate (**Table 6-1**), indicating extreme acute toxicity of the sediments to the test organisms. Survival for all other locations was not significantly different from the laboratory control. Mortality ranged from 4% at SE-RE-3/3-004 to 21% at SD-C1-005. Sediments having ≤24% mortality are considered nontoxic as defined by Berry et al. (1996, and cited in EPA 2005b). Growth in all treatments was significantly lower than in the laboratory control group. Growth at SD-C1-005 and reference site SE/RC-13/1-008 was significantly different (p=0.005) from reference site SD-007. Growth or reproduction of amphipods may be a more sensitive toxicity endpoint compared to survival (EPA, 2000). Natural or anthropogenic stressors that affect growth of invertebrates may also affect reproduction, because of a minimum size needed for reproduction (EPA, 2000). Thus, sediment contaminants had a toxic effect on growth at SD-C1-005.

Thus, based on bioassay results, there is risk to the benthic invertebrate community at two locations, SD-C1-005 and SC-E2-003.

6.1.4 Community Studies

Community studies are another line of evidence to determine whether aquatic ecosystem may have been impacted by site-related contaminants. Risks are characterized by comparing observed effects in the benthic invertebrate communities associated with the site with benthic invertebrate communities at reference sites.

The results of applying both the MBI and the TBI indices suggest that most of the sample locations have significant oxygen-depleting pollution concerns (**Table 6-3**). Generally, it is assumed that the more pollution there is in water, the less oxygen. A higher biotic index, on a scale of 0 to 10, indicates a higher tolerance of low dissolved oxygen and high organic pollution conditions. The highest MBI were measured at survey stations 002 (7.87), 003 (7.88), and 004 (8.0). The most tolerant taxa were also found at 002 and-004. Location 002 is approximately 20 feet downstream of the north ditch confluence. Locations 003 and 004 both located adjacent to the former site, between the former south ditch and the north ditch confluences, which were the two former wastewater outfalls to the river.

When looking at the individual metrics (**Table 6-4**), the highest taxa richness was at J-2, which is the furthest downstream location from the site, downstream of the north ditch confluence. The next highest number of taxa were found at the two reference locations. The total number of taxa measures the overall variety of the macroinvertebrate assemblage; as perturbation increases, the number of taxa will decrease (Barbour et al., 1999). The lowest number of taxa (2) were found at survey stations 003 and 004.

Three mayfly taxa were found at station 001, and one taxa was found at the reference locations. Mayflies are an important component of a high quality stream biota. As a group, they are decidedly pollution sensitive and are often the first group to disappear with the onset of perturbation. Thus, the number of taxa present is a good indicator of environmental conditions (MDEQ, 2002). Caddisfly taxa were only found in the reference locations, though they were found on submerged cinderblock between stations 004 and 005. Though tending to be slightly more pollution tolerant as a group than mayflies, caddisflies display a wide range of tolerance and habitat selection among species (MDEQ, 2002). Of note, stonefly was only found at station 003. Stoneflies are one of the most sensitive groups of aquatic insects. The presence of one or more taxa is often used to indicate very good environmental quality. Small increases or small declines in overall numbers of different stonefly taxa is thus very critical for correct evaluation of stream quality (MDEQ, 2002).

At stations 002, 003, and 004, the dominant taxa (>90%) was non-biting midges (*Chironomidae*). In contrast, chirnommidae were less than 75% of the total taxa at all other locations. The abundance of the numerically dominant taxon is an indication of community balance. A community dominated by relatively few taxa for example, would indicate environmental stress, as would a community composed of several taxa but numerically dominated by only one or two taxa (MDEQ, 2002). Chiromommidae have a tolerance value of 8; tolerance values are on a 0 to 10 scale, 0 representing the tolerance value of an extremely sensitive organism and 10 for a tolerant organism (Barbour et al., 1999).

The highest percent surface dependent species was found at station 005 (22%). .Surface dependent species were also found at station 001 (14%), A-1 (3%), and at one reference location (station 008, 9%). High numbers or percentages of surface breathers may indicate large diurnal dissolved oxygen shifts or other biological or chemical oxygen demanding constraints. Areas subject to elevated temperatures, low or erratic flows may also show disproportionately high percentages of surface dependent macroinvertebrates (MDEQ, 2002).

Thus, based on the community studies, there is risk to the benthic invertebrate community at three survey locations, 002, 003, and 004, though the most intolerant species was found at station 003.

6.2 Uncertainty Analysis

There are several sources of uncertainties associated with the ecological risk assessment process. The uncertainty analysis addresses the major assumptions that affect the degree of confidence in the estimate of risk. Knowing the uncertainties associated with the risk estimates aids the risk manager in making the Scientific/Management Decision at the end of the ecological risk assessment. General and site-specific uncertainties associated with this BERA include:

- The BERA is based on available data which, based on current practice, are assumed to be adequate. As the number of sampling points increase, the uncertainty about the true distributions of values decreases. However, even with a large number of sampling locations, it is impossible to conclude definitively that concentrations above those measured do not exist at the Site.

- Natural and anthropogenic background levels of Site constituents of ecological concern (COEC) may be present in sediment collected from the Site and surrounding areas. As such, Site data was compared to COEC concentrations in sediment samples collected from reference areas. Arsenic, chromium, copper, lead, nickel and zinc were measured in reference sediments at similar or higher concentrations than investigative samples (**Table 5-1**). Thus, site-related risks to aquatic receptors may be over-estimated because background levels of COEC are contributing to the risk.

6.3 RISK DESCRIPTION

The risk description provides information important for interpreting the risk results and for identifying a level for harmful effects on the assessment endpoints. The risk description also provides information to help the risk manager judge the likelihood and ecological significance of the estimated risks. At the completion of the risk characterization, a Scientific Management Decision Point (SMDP) occurs. Decisions are made by the risk manager concerning what future actions, if any, are to be undertaken.

The objective of this BERA is to support the implementation of the selected remedy for sediments in the Middle Fork o the Red Cedar River, which is forms the western boundary or the site. Areas of river sediments that are contaminated at levels considered unsafe for aquatic animals would be removed from the river. The degree of cleanup in the river sediments is based on the goal of protecting that animals that live part or all of their lives in the sediment (benthic organisms), which are important in the food chain of the river's ecosystem. Cleaning up sediments to protect benthic organisms is expected to benefit the fish, birds, and mammals that inhabit or feed in the river. This will also keep the surface water clean. To meet this objective, the BERA:

- Evaluated contaminant levels in sediment.
- Assessed the potential for adverse impact to ecological receptors, focusing on exposures to aquatic invertebrate communities, using sediment sampling, laboratory bioassays, and community studies.
- Utilizes results of the BERA and previous site investigation data to isolate the areas of sediment that will be removed and to establish site-specific cleanup goals

Sometimes more than one line of evidence is needed to reasonably show that contaminants from a Site are likely to cause adverse effects on the assessment endpoint(s). Lines of evidence that were used to characterize risk in this BERA and to site-specific cleanup levels include:

- Comparing estimated or measured exposure levels for a particular chemical in sediment against screening levels that are known from the literature to be toxic to the benthic invertebrates which were selected as assessment endpoints;
- Comparing laboratory tests (bioassays) with sediment from the Site and from a reference site and from the laboratory control; and

- Comparing observed effects in the benthic invertebrate communities associated with the Site with benthic invertebrate communities at a reference site.

Table 6-5 presents the lines of evidence used in assessing impacts on the aquatic ecosystems in the Red Cedar River in the vicinity of the site. Impacts on the aquatic ecosystem are highly likely due to lead at SD-E2-003 and nickel and zinc at SD-C1-005.

7.0 DEVELOPMENT OF SITE-SPECIFIC CLEANUP LEVEL

Based on the results of the sediment toxicity and benthic macroinvertebrate community studies, site-specific aquatic life protection criteria were developed for select chemicals of concern (COCs) in sediment. These site-specific criteria will be used in conjunction with additional bulk sediment sampling to better define impacted areas of Red Cedar River. As part of the sediment cleanup level development, chemicals of concern (COCs) are identified, background threshold values (BTVs) are developed, and cleanup levels are proposed based on the results the BERA.

7.1 Chemicals of Concern in Sediment

Sediment samples collected for chemical analysis as part of the BERA were analyzed for select metals (i.e., arsenic, cadmium, chromium, copper, lead, nickel, and zinc), PAHs, and PCBs. These analytes were considered to be chemicals of concern (COC) based on the FCMP (*Final Corrective Measures Proposal, Former Stanley Tool Works, Fowlerville, Michigan, Earth Tech/Weston, February, 2004*) and the FCMP Appendix D - *Technical Memorandum: Preliminary Sediment Cleanup Criteria and Data Evaluation, Red Cedar River, Former Stanley Tool* (ET/W, 2004).

The samples collected as part of the BERA contained no detectable PCBs in any of the investigative samples or the field duplicate samples. PCBs were detected in historic samples (ET/W, 2004) at concentrations ranging from 5.2 ug/kg to 9,180 ug/kg. A surface weighted average concentration of 152.6 ug/kg total PCBs was calculated in the FCMP (ET/W 2004), which does not exceed the PEC of 676 ug/kg.

Benzo(a)pyrene was detected in two BERA sediment samples, at concentrations below the TEC. PAHs were detected in historic samples (ET/W2004) at concentrations ranging from 6.3 ug/kg to 8,590 ug/kg. The sum of surface weighted averages of individual PAHs based on values calculated in the RCMP (ET/W, 2004) is 1,788.5 ug/kg, which slightly exceeds the PEC of 1610 ug/kg.

Arsenic was detected in six of the eight samples collected for the BERA, at concentrations ranging from 5.04 mg/kg to 12.8 mg/kg. Although the calculated Upper Confidence Limit (UCL) for the arsenic data set (at a 95%confidence level) is slightly greater than the TEC (10.25 v. 9.79 mg/kg), the arsenic data are normally distributed and exhibit a relatively low standard deviation, suggesting the data are from the same population (i.e., there has been no significant contribution to sediment concentrations of arsenic attributable to the Site). To test this hypothesis, the Extreme Values (Dixons Test) was utilized to determine if the maximum and minimum values of (12.8 mg/kg at sample SE/RC 9/1-002, and 1.675 [1/2 the reporting limit] at sample SE/RE 3/3-004) are statistical outliers. The results of this test, presented in **Table 7-1**, indicate that neither the minimum or maximum values are outliers, suggesting that the observed values of arsenic are from the same population, and are not indicative of impacts resulting from the site. Arsenic was detected in historic samples (ET/W2004) at concentrations ranging from 0.84 mg/kg to 65 mg/kg. The surface weighted average of arsenic calculated in the RCMP (ET/W, 2004) is 14.3 mg/kg, which slightly exceeds the TEC of 9.79 mg/kg.

While cadmium did not exceed its PEC, cadmium is included because it is a component of PEC quotient approach and it did exceed its TEC at a few historic sample locations. Cadmium was not detected in ay sample collected during the BERA. The reporting limits for cadmium were all below the TEC of 0.99 mg/kg. Cadmium concentrations in the historic samples ranged from 0.027 mg/kg to 1.9 mg/kg. The surface weighted average of cadmium calculated in the RCMP (ET/W, 2004) is 0.3 mg/kg, which does not exceed the TEC.

Table 7-2 presents a statistical summary and results of distribution testing on each of the remaining metals (i.e., chromium, copper, lead, nickel, and zinc). For statistical analysis, a value of one-half of the reporting limits was used for non-detect results. Where a field duplicate was collected, the higher of the two values reported between the investigative ample and the associated field duplicate sample was utilized. The data presented in **Table 7-2** reveal a marked increase in the concentrations of chromium, copper, nickel, and zinc within samples SD-E2-003, SD-C1-005 and SD-A1-006, as compared to the rest of the investigative samples and the two reference samples. In all cases, the average concentration from these three samples exceeded the average of the remainder of the sample set by at least one order-of-magnitude. The concentration of lead at sample SD-E2-003 showed a marked increase over the rest of the investigative samples and the two reference samples, however, concentrations of lead in samples SD-C1-005 and SD-A1-006, although still higher than the remainder of the data set, do not show the order-of-magnitude level of increase as exhibited by sample SD-E2-003.

7.2 Background Threshold Values

Site-specific background threshold values (BTVs) were developed for the COCs in sediment using background samples summarized in the Final Corrective Measures Proposal (ET/W, 2004) for the Former Stanley Tools, Fowlerville, MI and two reference samples collected as part of this BERA. Individual point-by-point site observations are compared with BTVs to determine the presence or absence of contamination due to site related activities. Appendix E (**Table E-1**) provides the background/reference dataset. As part of BTV development, Dixon's outlier test was performed on each dataset and boxplots were made; these results are provided in the appendix (**Table E-2**). Upper outliers were excluded from the datasets; lower outliers were not excluded. BTVs were developed using ProUCL version 4.0. Following the recommendation of ProUCL, the 95% upper prediction limit UPL or upper percentile for gamma distributed data represents the preferred estimate of BTV. For data that appear to follow one or more distribution (i.e., appear normal, lognormal, and/or gamma distributed at 5% significance level), the higher value of the normal 95% UPL, the lognormal 95% UPL, and the 95% percentile following a gamma distribution was selected as the BTV. If the UPL or upper percentile exceeded the maximum in the dataset, the maximum was selected as the BTV. The ProUCL output is provided in **Table E-3**. The BTVs are summarized in **Table 7-3.**

The BTVs for all chemicals were exceeded, though only slightly for arsenic and cadmium. Two-sample hypothesis testing was performed for these metals using ProUCL. The use of parametric and nonparametric two-sample hypotheses testing approaches is quite common in many environmental applications including site versus background comparison studies. The Mann-Whitney (or Wilcoxon-Mann-Whitney) test is a nonparametric test used for determining whether a difference exists between the site and the background population distributions. The two data sets are not required to be from a known type of distribution. The WMW test does not assume that the data are normally distributed, although a normal distribution approximation is used to determine the critical value of the test for large sample sizes (EPA, 2007). ʾased on this hypothesis testing, it was demonstrated that the site data is less than background for arsenic and cadmium (**Table E-4**). As these metals were found to be at background levels, they are not evaluated as further as COCs.

7.3 Proposed Cleanup Levels

Sediment cleanup levels are proposed for chemicals that pose a potential risk to the aquatic ecosystem of the Red Cedar River adjacent to the former Stanley Tools facility. The Final Decision reflects the recommendations presented within the *Technical Memorandum* (ET/W, 2004) for additional ecological testing to ensure that contaminants were not present in the stream at levels deemed harmful to aquatic life, and to define the areas with exceedences falling between preliminary screening criteria, specifically the Threshold Effect Concentrations (TECs), defined as concentrations below which adverse effects are not expected to occur ,and Probable Effect Concentrations (PECs), defined as concentrations above which adverse effects probably would occur. The TEC and PEC criteria are literature-based values for freshwater ecosystems and are used by the MDEQ Water Quality Division as screening criteria. These adverse effects are typically determined by exposure by the most sensitive of ecological receptors in high-quality freshwater ecosystems, unlike the Red Cedar River which has been determined to be a shallow, warm water stream which is too small to be navigated safely, and to shallow to support a sports fishery or attract recreational activities. Therefore they represent worst-case conservative values, which can then be refined with site-specific calculated values stemming from a BERA.

Of the COCs, PCBs and PAHs were not detected or detected infrequently in the BERA dataset. As such, a site-specific cleanup level cannot be determined from the BERA dataset for these COCs. As presented in the FCMP (ET/W, 2004), an ecological-based sediment cleanup value of 1 mg/kg is proposed for PCBs, using a surface weighted average concentration. The surface weighted average concentration of PCBs (0.1526 mg/kg) does not exceed the proposed cleanup level. For the total PAHs, the mid-point of the TEC and PEC is proposed as the cleanup level (12.205 ug/kg-total PAH at 1% organic carbon). The maximum normalized total PAH concentration in the historic dataset (ET/W, 2004) is 5.470 ug total PAH/kg, and does not exceed the proposed cleanup level.

For the remaining COCs, the following concentrations are proposed as the cleanup level for chromium, copper, lead, nickel, and zinc in sediments of the Red Cedar River:

Chromium - 133 mg/kg
Copper - 150 mg/kg
Lead – 130 mg/kg
Nickel – 58 mg/kg
Zinc – 527 mg/kg

The selection of these cleanup levels are supported by the sediment chemistry data, bioassay results, and community survey results for samples SD-E2-003, SD-C1-005, and SC-A1-006. Concentrations of chromium, lead, nickel and/or zinc exceeded published PEC concentrations in these three samples. However, toxic effects on benthic organisms were observed in the bioassays results only for locations SD-E2-003 and SD-C1-005. At SD-E2-003, lead is clearly the risk driver; at SD-C1-005, nickel and zinc are the risk drivers.

Although the concentrations of chromium, nickel and zinc at SD-A1-006 exceeded their respective PEC values, no toxic effects were found in the bioassay. In addition, MBI values for this location were the lowest observed at any of the community survey locations. Therefore, the observed concentrations of these contaminants at SD-A1-006 are proposed as their clean-up objectives.

The concentration of lead found in sediments at SD-E2-003 (789 mg/kg) is well above published TEC and PEC levels. It is notable however, that lead has not been detected at highly elevated concentrations within any other investigative sediment sample collected in the River at or near the Site. Specifically, of the 133 historic (ET/W, 2004) and BERA-related sediment samples collected and analyzed for lead excluding sample SD-E2-003, the maximum and mean concentrations observed, were 97 mg/kg (at SD-L1), and 13.3 mg/kg, respectively. These values are below the published PEC value (130 mg/kg) for this contaminant. Because of the lack of data between the extreme value detected at SD-E2-003 and the remaining sample population from which inferences may be drawn regarding observable toxic effects, the published PEC value for lead is considered appropriate as a clean-up objective.

Elevated concentrations of copper in sediments in the Red Cedar River are co-located with similar elevated concentrations of chromium, nickel and/or zinc. Although the concentrations of copper in the BERA sediment samples are somewhat elevated in samples SD-E2-003, SD-C1-005, and SC-A1-006, copper does not appear to drive risk in any samples. Thus, the published PEC value for copper is considered appropriate as a clean-up objective.

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TABLES

Table 5-1
Sediment Chemistry Results

Field Sample ID		BTV	SD-J2-001	SD-J2-001/FD	SE/RC-9/1-002	SD-E2-003	SE-RE-3/3-004	SD-C1-005	SD-A1-006	SD-007	SE/RC-13/1-008
Sample Date			7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/25/2007	7/25/2007
Location ID			J2	J2	RC-9/1	E2	SE-RE-3/3	SD-C1	A1	SD-007	SE/RC-13/1
Depth (IN)			0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12
Parameter	**Units**										
Percent Solids	%	--	**66**	**70.9**	**73.6**	**60.9**	**74.7**	**61**	**58.9**	**73.2**	**73.8**
Total Organic Carbon	mg/kg	--	**11,900**	**12,000**	**10,200**				**20,800**		
METALS											
Arsenic, Total	mg/kg	13.7	**5.04**	**6.28**	**12.8**	**10.7**	<3.35 U	**10.9**	**8.64**	<3.42 U	**7.11**
Cadmium, Total	mg/kg	0.513	<0.757 U	<0.706 U	<0.679 U	<0.821 U	<0.669 U	<0.820 U	<0.848 U	<0.683 U	<0.678 U
Chromium, Total	mg/kg	13.87	**11.3**	**13.5**	**13.2**	**112**	**7.27**	**77.2**	**133**	**3.27**	**6.61**
Copper, Total	mg/kg	20.39	**14.7**	**12.5**	**11.7**	**133**	**9.17**	**107**	**97**	<3.42 U	**9.29**
Lead, Total	mg/kg	16.19	**4.16**	**4.18**	**9.18**	**789**	**4.03**	**11.2**	**15.1**	<3.42 U	**4.64**
Nickel, Total	mg/kg	11.6	**8.04**	**8.62**	**6.56**	**43.5**	**6.64**	**267**	**57.9**	<3.42 U	**9.16**
Zinc, Total	mg/kg	88.36	**29.7**	**31.4**	**29.6**	**158**	**27.3**	**675**	**527**	**10.1**	**21.7**
PCBS											
PCB-1016	ug/kg	0.097*	<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1221	ug/kg	0.097*	<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1232	ug/kg	0.097*	<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1248	ug/kg	0.097*	<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1254	ug/kg	0.097*	<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1260	ug/kg	0.097*	<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
SVOCS											
Acenaphthene	ug/kg	1.453*	<1320 U	<1410 U	<1990 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Acenaphthylene	ug/kg	1.453*	<2650 U	<2820 U	<2370 U	<3280 U	<2410 U	<3280 U	<2730 U	<2440 U	<2440 U
Anthracene	ug/kg	1.453*	<1320 U	<1410 U	<1990 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Benz(a)anthracene	ug/kg	1.453*	<661 U	<706 U	<593 U	<821 U	<602 U	<820 U	<682 U	<610 U	<610 U
Benzo(a)pyrene	ug/kg	1.453*	<66.1 U	<70.6 U	**78.7**	**82.5**	<60.2 U	<82.0 U	**111**	**155**	<61.0 U
Benzo(b)fluoranthene	ug/kg	1.453*	<661 U	<706 U	<593 U	<821 U	<602 U	<820 U	<682 U	<610 U	<610 U
Benzo(g,h,i)perylene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Benzo(k)fluoranthene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Chrysene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Dibenz(ah)anthracene	ug/kg	1.453*	<66.1 U	<70.6 U	<59.3 U	<82.1 U	<60.2 U	<82 U	<68.2 U	<61.0 U	<61.0 U
Fluoranthene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Fluorene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Indeno(1,2,3-cd)pyrene	ug/kg	1.453*	<661 U	<706 U	<593 U	<821 U	<602 U	<820 U	<682 U	<610 U	<610 U
Naphthelene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Phenanthrene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Pyrene	ug/kg	1.453*	<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U

* Based on total PNAs; total PCBs

BTV = Background threshold value; see Appendix D.

NOTE:

< [Value] U: Value not detected at or above the stated reporting limit

Table 5-2
Bioassay Results

Field Sample ID		SD-J2-001	SD-J2-001/FD	SE/RC-9/1-002	SD-E2-003	SE-RE-3/3-004	SD-C1-005	SD-A1-006	SD-007 REFERENCE	SE/RC-13/1-008 REFERENCE
Sample Date		7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/25/2007	7/25/2007
Location ID		J2	J2	RC-9/1	E2	SE-RE-3/3	SD-C1	A1	SD-007	SE/RC-13/1
Depth (IN)		0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12
Parameter	Units									
Toxicity[a]										
Survival	%	95	--	91	**0**	96	79	91	94	95
Weight	mg	0.365	--	0.437	**NA**	0.372	**0.293***	0.405	0.417	**0.343***

NOTE:

[a] Lab control sample had 94% survival and weighted 0.543 mg

* Significantly different (p=0.005) from reference site SD-007. Growth in all treatments was significantly lower than in the laboratory control group. Survival in sediment SD-E2-003 was significantly depressed compared to both reference site (SD007 and S

Table 5-3
Benthic Macroinvertebrate Sample Composition

Location	Family Name	Common Name	Trophic Status
SD-J2-001	Tubificidae	Tubifex	Collector-Gatherer
	Cambaridae	Freshwater Crawfishes	Predator
	Chironomidae	Non-Biting Midges	Gatherer
	Heptageniidae	Flat-Headed Mayflies	Predator
	Dytiscidae	Water Beetles	Predator
	Ephemerellidae	Spiny Crawler Mayflies	Gatherer
	Baetidae	Small Minnow Mayfly	Collector-Gatherer/ Scraper
	Gyrinidae	Whirligig Beetles	Predator
	Libellulidae	Skimmer Dragonflies	Predator
	Palaemonetes	Freshwater Shrimp	Gatherer
	Psephenidae	Water Pennies	Gatherer
SE/RC-9/1-002	Chironomidae	Non-Biting Midges	Gatherer
	Clam	Clam	Gatherer
	Dytiscidae	Water Beetles	Predator
SD-E2-003	Chironomidae	Non-Biting Midges	Gatherer
	Perlidae	Common Stoneflies	Predator
SE/RE-3-3-004	Chironomidae	Non-Biting Midges	Gatherer
	Clam	Clams	Gatherer
SD-C1-005	Amphipoda	Scuds	Scavenger
	Chironomidae	Non-Biting Midges	Gatherer
	Corixidae	Water Boatmen	Gatherer
	Dytiscidae	Water Beetles	Predator
SD-A1-006	Ceratopogonidae	Biting Midges	Predator
	Chironomidae	Non-Biting Midges	Gatherer
	Corixidae	Water Boatmen	Gatherer
	Elmidae	Riffle Beetles	Gatherer
SD-007	Chironomidae	Non-Biting Midges	Gatherer
	Clam	Clams	Gatherer
	Elmidae	Riffle Beetles	Gatherer
	Heptageniidae	Flat-Headed Mayflies	Predator
	Hydropsychidae	Net-Spinning Caddisflies	Gatherer or Predator
	Leptoceridae	Long-Horned Caddisflies	Gatherer or Predator
SD-008	Chironomidae	Non-Biting Midges	Gatherer
	Culicidae	Mosquitos	Predator
	Dytiscidae	Water Beetles	Predator
	Gyrinidae	Whirligig Beetles	Predator
	Heptageniidae	Flat-Headed Mayflies	Predator
	Leptoceridae	Long-Horned Caddisflies	Gatherer or Predator
	Limnephilidae	Northern Caddisflies	Gatherer or Predator
Between SE/RE-3-3-004 and SD-C1-005	Chironomidae	Non-Biting Midges	Gatherer
	Heptageniidae	Flat-Headed Mayflies	Predator
	Leptoceridae	Long-Horned Caddisflies	Gatherer or Predator
	Limnephilidae	Northern Caddisflies	Gatherer or Predator

Table 5-4 Benthic Macroinvertebrate Community Survey Results

Macroinvertebrate Community		Sample Number								
		SD-J2-001	SE/RC-9/1-002	SD-E2-003	SE/RE-3-3-004	SD-C1-005	SD-A1-006	SD-007	SD-008	Between SE/RE-3-3-004 and SD-C1-005*
		Sample Data								
Taxon	**Common Name**									
Tubificidae	Tubifex	5								
Cambaridae	Freshwater Crawfishes	2								
Ceratopogonidae	Biting Midges						2			
Chironomidae	Non-Biting Midges	33	42	47	67	37	14	23	34	8
Clam	Clams		1		1			3		
Corixidae	Water Boatmen					10	1			
Culicidae	Mosquitos								1	
Dytiscidae	Water Beetles	3	2			1			2	
Elmidae	Riffle Beetles						14	1		
Ephemerellidae	Spiny Crawler Mayflies	1								
Baetidae	Small Minnow Myflies	1								
Gyrinidae	Whirligig Beetles	1							1	
Heptageniidae	Flat-Headed Mayflies	3						2	1	11
Hyalella	Scuds					1				
Hydropsychidae	Net-Spinning Caddisflies							3		
Leptoceridae	Long-Horned Caddisflies							1	4	1
Libellulidae	Skimmer Dragonflies	1								
Limnephilidae	Northern Caddisflies								4	3
Palaemonetes	Freshwater Shrimp	1								
Perlidae	Common Stoneflies			1						
Psephenidae	Water Pennies	4								

1*Sample collected from an emerged cinderblock; not representative of sediment conditions, but provides information on the presence of these species within the waterbody.

Table 6-1
Comparison to Sediment Quality Benchmarks

Field Sample ID		Sediment Benchmarks[b]		SD-J2-001	SD-J2-001/FD	SE/RC-9/1-002	SD-E2-003	SE-RE-3/3-004	SD-C1-005	SD-A1-006	SD-007 REFERENCE	SE/RC-13/1-008 REFERENCE
Sample Date				7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/25/2007	7/25/2007
Location ID				J2	J2	RC-9/1	E2	SE-RE-3/3	SD-C1	A1	SD-007	SE/RC-13/1
Depth (IN)		TEC[d]	PEC	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12
Parameter	**Units**											
Toxicity[a]												
Survival	%			95	--	91	**0**	96	79	91	94	95
Weight	mg			0.365	--	0.437	**NA**	0.372	**0.293***	0.405	0.417	**0.343***
Physical Properties												
Percent Solids	%			66	70.9	73.6	60.9	74.7	61	58.9	73.2	73.8
Total Organic Carbon	mg/kg			11,900	12,000	10,200				20,800		
Total Organic Carbon	%			1.19	1.20	1.02				2.08		
METALS												
Arsenic, Total	mg/kg	9.8	33	5.04	6.28	**12.8**	**10.7**	<3.35 U	**10.9**	8.64	<3.42 U	7.11
Cadmium, Total	mg/kg	0.99	5	<0.757 U	<0.706 U	<0.679 U	<0.821 U	<0.669 U	<0.820 U	<0.848 U	<0.683 U	<0.678 U
Chromium, Total	mg/kg	43	110	11.3	13.5	13.2	**112**	7.27	**77.2**	**133**	3.27	6.61
Copper, Total	mg/kg	32	150	14.7	12.5	11.7	**133**	9.17	**107**	**97**	<3.42 U	9.29
Lead, Total	mg/kg	36	130	4.16	4.18	9.18	**789**	4.03	11.2	15.1	<3.42 U	4.64
Nickel, Total	mg/kg	23	49	8.04	8.62	6.56	**43.5**	6.64	**267**	**57.9**	<3.42 U	9.16
Zinc, Total	mg/kg	120	460	29.7	31.4	29.6	**158**	27.3	**675**	**527**	10.1	21.7
PCBS												
PCB-1016	ug/kg			<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1221	ug/kg			<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1232	ug/kg			<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1248	ug/kg			<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1254	ug/kg			<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U
PCB-1260	ug/kg			<0.045 U	<31.1 U	<30.9 U	<29.9 U	<26.3 U	<29.2 U	<29.6 U	<42.2 U	<28.9 U

Table 6-1
Comparison to Sediment Quality Benchmarks

Field Sample ID		Sediment Benchmarks[b]		SD-J2-001	SD-J2-001/FD	SE/RC-9/1-002	SD-E2-003	SE-RE-3/3-004	SD-C1-005	SD-A1-006	SD-007 REFERENCE	SE/RC-13/1-008 REFERENCE
Sample Date				7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/24/2007	7/25/2007	7/25/2007
Location ID				J2	J2	RC-9/1	E2	SE-RE-3/3	SD-C1	A1	SD-007	SE/RC-13/1
Depth (IN)		TEC[d]	PEC	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12	0-12
Parameter	Units											
SVOCS												
Acenaphthene	ug/kg			<1320 U	<1410 U	<1990 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Acenaphthylene	ug/kg			<2650 U	<2820 U	<2370 U	<3280 U	<2410 U	<3280 U	<2730 U	<2440 U	<2440 U
Anthracene	ug/kg			<1320 U	<1410 U	<1990 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Benz(a)anthracene	ug/kg			<661 U	<706 U	<593 U	<821 U	<602 U	<820 U	<682 U	<610 U	<610 U
Benzo(a)pyrene	ug/kg	206[c]	1987[c]	<66.1 U	<70.6 U	78.7	82.5	<60.2 U	<82.0 U	111	155	<61.0 U
Benzo(b)fluoranthene	ug/kg			<661 U	<706 U	<593 U	<821 U	<602 U	<820 U	<682 U	<610 U	<610 U
Benzo(g,h,i)perylene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Benzo(k)fluoranthene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Chrysene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Dibenz(ah)anthracene	ug/kg			<66.1 U	<70.6 U	<59.3 U	<82.1 U	<60.2 U	<82 U	<68.2 U	<61.0 U	<61.0 U
Fluoranthene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Fluorene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Indeno(1,2,3-cd)pyrene	ug/kg			<661 U	<706 U	<593 U	<821 U	<602 U	<820 U	<682 U	<610 U	<610 U
Naphthelene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Phenanthrene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U
Pyrene	ug/kg			<1320 U	<1410 U	<1190 U	<1640 U	<1200 U	<1640 U	<1360 U	<1220 U	<1220 U

NOTE:

< [Value] U: Value not detected at or above the stated reporting limit

[a] Lab control sample had 94% survival and weighted 0.543 mg

[b] PEC and TEC values not presented for chemicals that were not positively detected in sediment.

[c] Adjusted to average TOC in sediments of 1.37% or 13,725 mg/kg.

[d] The Region 5 RCRA ecological screening level (ESL) is equivalent to the Consensus based threshold effect concentrations (TEC) as presented in MacDonald et. al. 2000.
Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems.
Arch Environ Contam Toxicol 39:20-31 (see Table 2).

* Significantly different (p=0.005) from reference site SD-007. Growth in all treatments was significantly lower than in the laboratory control group. Survival in sediment SD-E2-003 was significantly depressed compared to both reference site (SD007 and SE/RC-13/1-008) and lab control.

Bold indicates exceeds TEC; shading indicates exceeds PEC.

Table 6-2
Mean Probable Effect Concentration Quotients (PEC-Q) for Metals (mg/kg)
JCI - Former Stanely Tools
Fowlerville, MI

Field Sample ID	Arsenic		Chromium		Copper		Lead		Nickel		Zinc			Probability of Toxicity[a]
PEC	33	PEC-Q	110	PEC-Q	150	PEC-Q	130	PEC-Q	49	PEC-Q	460	PEC-Q	Mean PEC-Q	Y = 101.48-(1-0.36^X)
SD-J2-001	5.04	0.15	11.3	0.10	14.7	0.10	4.16	0.03	8.04	0.16	29.7	0.06	0.10	10.1
SD-J2-001/FD	6.28	0.19	13.5	0.12	12.5	0.08	4.18	0.03	8.62	0.18	31.4	0.07	0.11	11.0
SE/RC-9/1-002	**12.8**	0.39	13.2	0.12	11.7	0.08	9.18	0.07	6.56	0.13	29.6	0.06	0.14	13.7
SD-E2-003	**10.7**	0.32	**112**	1.02	**133**	0.89	**789**	6.07	**43.5**	0.89	**158**	0.34	**1.59**	**81**
SE-RE-3/3-004	<3.35	--	7.27	0.07	9.17	0.06	4.03	0.03	6.64	0.14	27.3	0.06	0.07	7.1
SD-C1-005	**10.9**	0.33	**77.2**	0.70	**107**	0.71	11.2	0.09	**267**	5.45	**675**	1.47	**1.46**	**79**
SD-A1-006	8.64	0.26	**133**	1.21	**97**	0.65	15.1	0.12	**57.9**	1.18	**527**	1.15	**0.76**	**55**
SD-007 REFERENCE	<3.42	--	3.27	0.03	<3.42	--	<3.42	--	<3.42	--	10.1	0.02	0.026	2.6
SE/RC-13/1-008 REFERENCE	7.11	0.22	6.61	0.06	9.29	0.06	4.64	0.04	9.16	0.19	21.7	0.05	0.10	10.0

Note: Cadmium was not detected in any sample.
-- PEC-Q not calculated for non-detect concentration.
Bold indicates exceeds TEC; shading indicates exceeds PEC.
Mean PEC-Q = Sum PEC/total number of chemicals.

a MacDonald et al.(2000) found that subsequent curve-fitting indicated that the mean PEC-quotient is highly correlated with incidence of toxicity ($r^2 = 0.98$), with the relationship being an exponential function. The resulting equation ($Y = 101.48 (1-0.36^X)$) can be used to estimate the probability of observing sediment toxicity at any mean PEC quotient.

Ta. 5-3
Benthic Macroinvertebrate Community Analysis

Macroinvertebrate Community		Family MBI Tolerance Value[1]	Sample Number								
			SD-J2-001	SE/RC-9/1-002	SD-E2-003	SE/RE-3-3-004	SD-C1-005	SD-A1-006	SD-007 Reference	SD-008 Reference	Between SE/RE-3-3-004 and SD-C1-005*
			Sample Data								
Taxon	**Common Name**										
Tubificidae	Tubifex	9	5								
Cambaridae	Freshwater Crawfishes	6	2								
Ceratopogonidae	Biting Midges	6						2			
Chironomidae	Non-Biting Midges	8	33	42	47	67	37	14	23	34	8
Clam	Clams	8		1		1			3		
Corixidae	Water Boatmen	5					10	1			
Culicidae	Mosquitos	8								1	
Dytiscidae	Water Beetles	5	3	2			1			2	
Elmidae	Riffle Beetles	4						14	1		
Ephemerellidae	Spiny Crawler Mayflies	1	1								
Baetidae	Small Minnow Myflies	3	1								
Gyrinidae	Whirligig Beetles	4	1							1	
Heptageniidae	Flat-Headed Mayflies	3	3						2	1	11
Hyalella	Scuds	8					1				
Hydropsychidae	Net-Spinning Caddisflies	4							3		
Leptoceridae	Long-Horned Caddisflies	4							1	4	1
Libellulidae	Skimmer Dragonflies	2	1								
Limnephilidae	Northern Caddisflies	3								4	3
Palaemonetes	Freshwater Shrimp	6	1								
Perlidae	Common Stoneflies	2			1						
Psephenidae	Water Pennies	4	4								
No. MBI Organisms Counted[2]			**55**	**45**	**48**	**68**	**49**	**31**	**33**	**47**	**23**
MBI[3,5]			**6.85**	**7.87**	**7.88**	**8.00**	**7.33**	**5.97**	**7.09**	**6.91**	**4.78**
TBI[4,5]			**4.64**	**7.00**	**5.00**	**8.00**	**6.50**	**5.75**	**5.17**	**5.00**	**4.50**
Total Number of Taxa			**11**	**3**	**2**	**2**	**4**	**4**	**6**	**7**	**4**

Notes:

1. Family MBI tolerance values (t_i) are from http://www.epa.gov/owow/monitoring/rbp/index.html , 2006.
2. A Maximum of 10 organisms was used for MBI calculations, according to Hilsenhoff, 1988.
3. Macroinvertebrate Biotic Index (MBI) = $\Sigma n_i t_i)/N$ where n_i = no. individuals in each listed taxon, t_i = tolerance rating for each listed taxon, and N = total no. of listed organisms counted (IEPA, 2002).
4. Mean tolerance value (TBI) = $\Sigma t_i/T$ where t_i=tolerance value for each listed taxon and T = no, of listed taxon in the sample (from Lillie and Schlesser, 1994).
5. Biotic Index (MBI and TBI) Interpretation (from Hilsenhoff, 1987).

*Sample collected from an emerged cinderblock; not representative of sediment conditions, but provides information on the presence of these species within the waterbody.

Value	Water Quality	Degree of Organic Pollution
0.00-3.50	Excellent	No apparent organic pollution
3.51-4.50	Very Good	Possible slight organic pollution
4.51-5.50	Good	Some organic pollution
5.51-6.50	Fair	Fairly significant organic pollution
6.51-7.50	Fairly Poor	Significant organic pollution
7.50-8.50	Poor	Very significant organic pollution
8.51-10.00	Very Poor	Severe organic pollution

Table 6-4
Benthic Macroinvertebrate Community Metrics

Macroinvertebrate Community			SD-J2-001	SE/RC-9/1-002	SD-E2-003	SE/RE-3-3-004	SD-C1-005	SD-A1-006	SD-007	SD-008	Between SE/RE-3-3-004 and SD-C1-005 [1]
			Sample Data (Number of Organisms Collected per Taxa)								
Taxon	**Common Name**	**Order**									
Tubificidae	Tubifex	Clitellata	5								
Cambaridae	Freshwater Crawfishes	Decapoda	2								
Palaemonetes	Freshwater Shrimp	Decapoda	1								
Hyalella	Scuds	Amphipoda					1				
Culicidae	Mosquitos	Diptera								1	
Ceratopogonidae	Biting Midges	Diptera						2			
Chironomidae	Non-Biting Midges	Diptera	33	42	47	67	37	14	23	34	8
Clam	Clams	Veneroida		1		1			3		
Corixidae	Water Boatmen	Hemiptera					10	1			
Dytiscidae	Water Beetles	Coleoptera	3	2			1			2	
Psephenidae	Water Pennies	Coleoptera	4								
Gyrinidae	Whirligig Beetles	Coleoptera	1							1	
Elmidae	Riffle Beetles	Coleoptera						14	1		
Ephemerellidae	Spiny Crawler Mayflies	Ephemeroptera	1								
Baetidae	Small Minnow Mayflies	Ephemeroptera	1								
Heptageniidae	Flat-Headed Mayflies	Ephemeroptera	3						2	1	11
Hydropsychidae	Net-Spinning Caddisflies	Trichoptera							3		
Leptoceridae	Long-Horned Caddisflies	Trichoptera							1	4	1
Limnephilidae	Northern Caddisflies	Trichoptera								4	3
Perlidae	Common Stoneflies	Plecoptera			1						
Libellulidae	Skimmer Dragonflies	Odonata	1								
Total Number of Organisms Counted			**55**	**45**	**48**	**68**	**49**	**31**	**33**	**47**	**23**
Total number of taxa			**11**	**3**	**2**	**2**	**4**	**4**	**6**	**7**	**4**
Total number of mayfly (Ephemeroptera) taxa present (N)			**3**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**
Percent Mayfly Composition (%)			**9.09**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**6.06**	**2.13**	**47.83**
Total number of caddisfly (Trichoptera) taxa present (N)			**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**1**
Percent Caddisfly Composition (%)			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.03**	**17.02**	**17.39**
Total number of stonefly (Plecoptera) taxa present			**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Percent Stonefly Composition (%) [2]			**0.00**	**0.00**	**2.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Percent Contribution of the Dominant Taxon (%)			**60.00**	**93.33**	**97.92**	**98.53**	**75.51**	**45.16**	**69.70**	**72.34**	**47.83**
Percent Isopods, Snails, and Leeches (%)			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Percent Surface Dependent (hemiptera, diptera, coleoptera) (%) [3]			**14.55**	**4%**	**0%**	**0%**	**22%**	**3%**	**0%**	**9%**	**0%**

1 - Sample collected from an emerged cinderblock; not representative of sediment conditions, but provides information on the presence of these species within the waterbody.

2 - Not a listed Metric in MDEQ Procedure #51.

3 - Surface Dependent Taxa highlighted in Blue - See Appendix I, MDEQ Procedure #51.

Table 6-5
Lines of Evidence for Assessing Impacts on Aquatic Ecosystems at Measured Sediment Concentrations

Line of Evidence	Sample Location					
	SD-J2-001	SE/RC-9/1-002	SD-E2-003	SE-RE-3/3-004	SD-C1-005	SD-A1-006
Sediment Chemistry	PEC-Q<0.5 threshold; No impact	PEC-Q<0.5 threshold; No impact	81% probability of observing sediment toxicity at any mean PEC quotient; lead and chromium (slightly) above PEC	PEC-Q<0.5 threshold; No impact	79% probability of observing sediment toxicity at any mean PEC quotient; Nickel and zinc above PEC	55% probability of observing sediment toxicity at any mean PEC quotient; chromium, nickel and zinc slightly above PEC.
Bioassay	No impact on survival/growth in comparison to reference	No impact on survival/growth in comparison to reference	100% Mortality	No impact on survival/growth in comparison to reference	21% Mortality (not significant); Significant decrease in growth	No impact on survival/growth in comparison to reference
Benthic Community*	Biotic index - significant organic pollution; intolerant taxa present	Biotic index - very significant pollution	Biotic index - very significant pollution; senstive taxa present	Biotic index - very significant pollution	Biotic index - significant organic pollution; intolerant taxa present	Biotic index - fairly significant organic pollution
Overall Conclusion	Impact unlikely	Impact possible; other sources contributing to impacts	Impact highly likely based on toxicity test and PEC-Q	Impact possible; other sources contributing to impacts	Impact likely based on toxicity test and PEC-Q	Impact possible; other source may be contributing

* Reference locations biotic index showed significant organic pollution; intolerant taxa present.

Table 7-1
Arsenic Statistical Evaluation

	As		
SE/RE 3/3-004	1.675	U	X1
SD-007	1.71	U	X2
SD-J2-001/FD	**6.28**		
SE/RC 13/1-008	**7.11**		
SD-A1-006	**8.64**		
SD—E2-003	**10.7**		
SD—C1-005	**10.9**		Xn-1
SE/RC 9/1-002	**12.8**		Xn

Null hypothesis = There are no outliers in the data
Alternative hypothesis - Xn is an outlier
Compute test statistic C = X(n) - X (n-1) / X (n) - X(2)

C = 0.171326
$d_{0.05}$ = 0.554
Conclusion: C > d, reject the null hypothesis

Null hypothesis = There are no outliers in the data
Alternative hypothesis - X1 is an outlier
Compute test statistic C = X(2) - X (1) / X (n-1) - X(2)

C = 0.003808
$d_{0.05}$ = 0.554
Conclusion: C > d, reject the null hypothesis

Table 7-2
Statistical Evaluation of BERA Sediment Data

As			Cr			Cu		
SE/RE 3/3-004	1.675	U	SD-007	**3.27**		SD-007	1.71	U
SD-007	1.71	U	SE/RC 13/1-008	**6.61**		SE/RE 3/3-004	**9.17**	
SD-J2-001/FD	**6.28**		SE/RE 3/3-004	**7.27**		SE/RC 13/1-008	**9.29**	
SE/RC 13/1-008	**7.11**		SE/RC 9/1-002	**13.2**		SE/RC 9/1-002	**11.7**	
SD-A1-006	**8.64**		SD-J2-001/FD	**13.5**		SD-J2-001	**14.7**	
SD—E2-003	**10.7**		SD—C1-005	**77.2**		SD-A1-006	**97**	
SD—C1-005	**10.9**		SD—E2-003	**112**		SD—C1-005	**107**	
SE/RC 9/1-002	**12.8**		SD-A1-006	**133**		SD—E2-003	**133**	

	As		Cr		Cu	
Number of Non Detects		2		0		1
Percent Non-Detects		25		0		12.5
Minimum		1.675		3.27		1.71
Maximum		12.8		133		133
Mean		7.48		45.76		47.95
Standard Deviation		4.15		53.33		54.36
Distribution	Normal		LogNormal		LogNormal	
UCL	Student's-t (95%)	10.25	Approximate gamma UCL (95%)	125.35	Approximate gamma UCL (95%)	134.33
Mean of samples 3, 5, and 6				107.4		112.3
Mean of remainder of samples				8.8		9.3

Pb			Ni			Zn	
SD-007	1.71	U	SD-007	1.71	U	SD-007	**10.1**
SE/RE 3/3-004	**4.03**		SE/RC 9/1-002	**6.56**		SE/RC 13/1-008	**21.7**
SD-J2-001	**4.16**		SE/RE 3/3-004	**6.64**		SE/RE 3/3-004	**27.3**
SE/RC 13/1-008	**4.64**		SD-J2-001/FD	**8.62**		SE/RC 9/1-002	**29.6**
SE/RC 9/1-002	**9.18**		SE/RC 13/1-008	**9.16**		SD-J2-001/FD	**31.4**
SD—C1-005	**11.2**		SD—E2-003	**43.5**		SD—E2-003	**158**
SD-A1-006	**15.1**		SD-A1-006	**57.9**		SD-A1-006	**527**
SD—E2-003	**789**		SD—C1-005	**267**		SD—C1-005	**675**

	Pb		Ni		Zn	
Number of Non Detects		1		1		0
Percent Non-Detects		12.5		12.5		0
Minimum		1.71		1.71		10.1
Maximum		789		267		675
Mean		104.88		50.14		185.01
Standard Deviation		276.46		89.98		263.94
Distribution	Non-Parametric		Log-Normal		Log-Normal	
UCL	95% Chebyshev (Mean,Sd) UCL	530.93	Approximate gamma UCL (95%)	165.93	95% Chebyshev (MVUE) UCL	586.92
Mean of samples 3, 5, and 6				122.8		453.3
Mean of remainder of samples				6.5		24.0

Note: Cadmium is not evaluated because all samples were non-detect.

Table 7-3
Background Threshold Values

	Maximum	Distribution	Normal 95 UPL	Lognormal UPL	Gamma Upper 95th Percentile	BTV	Basis	Maximum Investigative Concentration
Total PCBs	0.097	Insufficient data				0.097	Maximum	9.18
Total PNAs	1.463	N;LN;G	1.453	2.518	1.645	1.453	Normal UPL	8.59
Arsenic*	13.7	N;LN;G	14.34	18.79	15.77	13.7	Maximum	65
Cadmium*	0.52	N;LN;G	0.513	0.576	0.537	0.513	Normal UPL	2.5
Chromium*	14	N;LN;G	12.74	13.87	13.04	13.87	Lognormal UPL	1760
Copper	21.7	N;LN;G	20.39	30.34	22.97	20.39	Normal UPL	1370
Lead	17	N;LN;G	15.04	18.87	16.19	16.19	Gamma upper percentile	789
Nickel *	11.6	N;G	11.72	--	13.13	11.6	Maximum	432
Zinc	96	LN;G	--	103.8	88.36	88.36	Gamma upper percentile	2120

All concentrations in mg/kg.
N = Normal; LN = lognormal; G = Gamma
UPL = Upper prediction limit
* Outliers Removed from Dataset
As - 35.8 mg/kg and 27 mg/kg
Ba - 178 mg/kg
Cd - 2 mg/kg
Cr - 18 mg/kg
Ni - 15 mg/kg

FIGURES

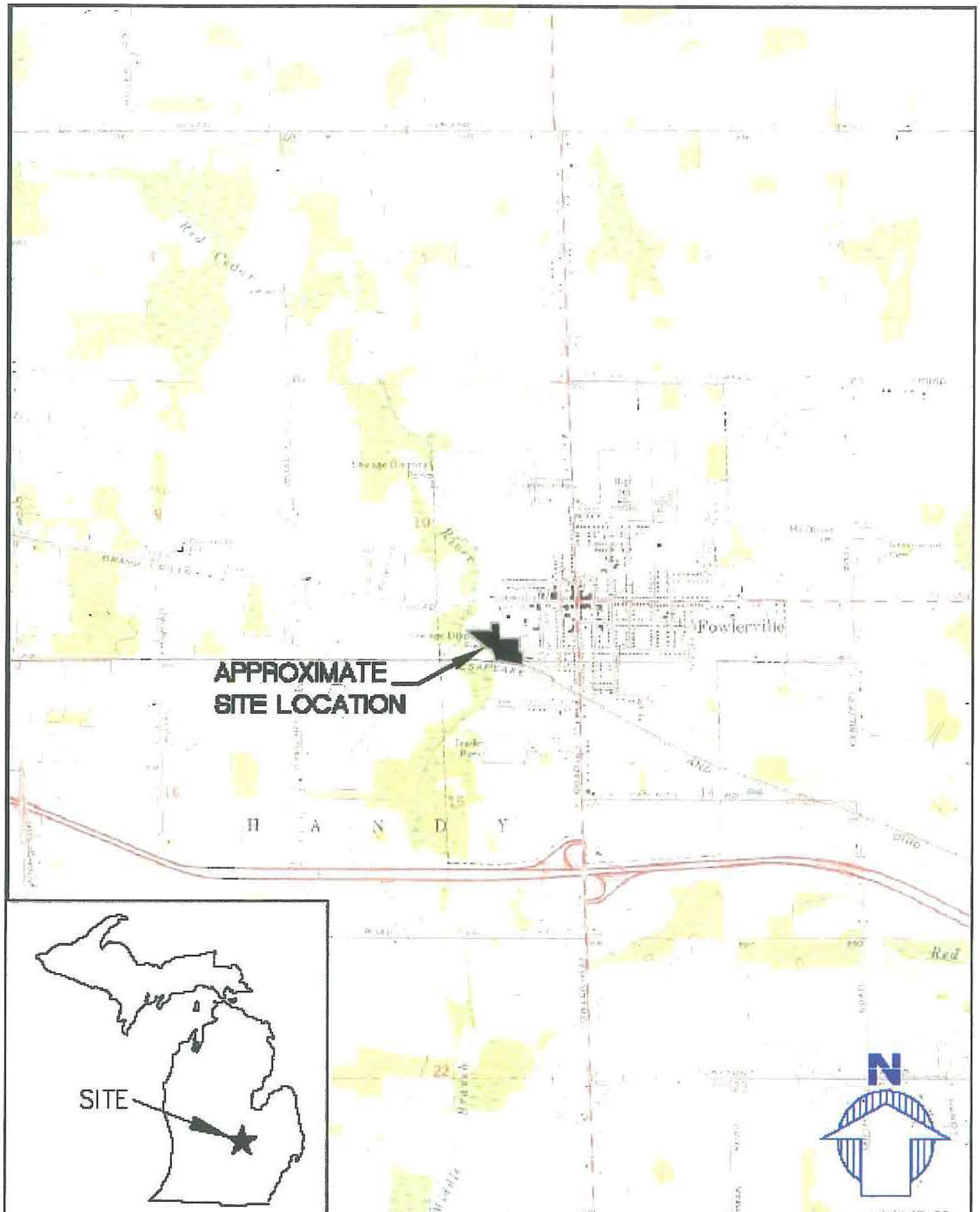
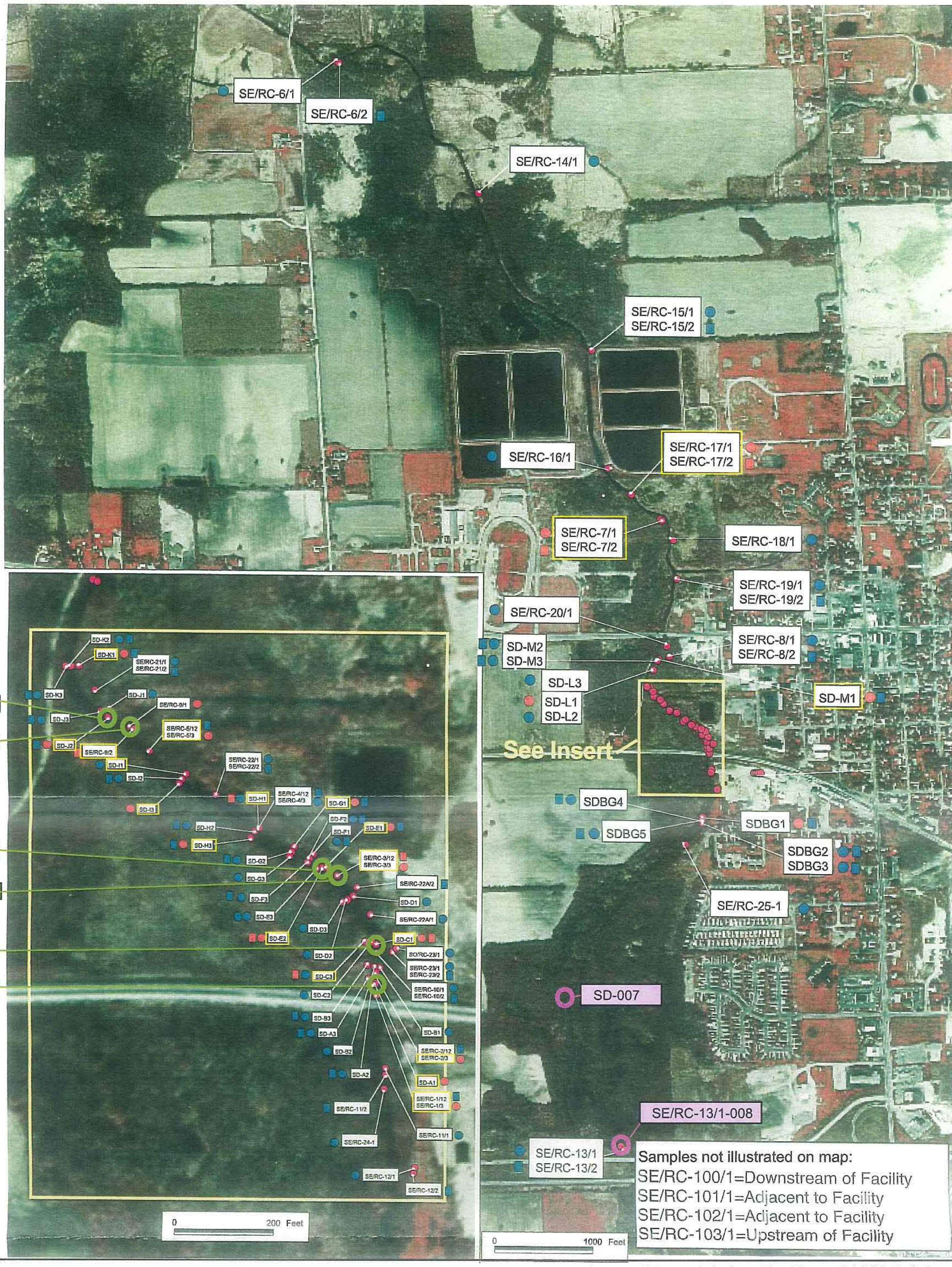


Figure 1
Site Location Map
Former JCI Stanley Tools Facility
Fowlerville, MI

Figure 3-2
Ecological Conceptual Site Model

Exposure Medium	Exposure Route	Receptor Macrobenthos
Sediment	Ingestion	X
	Direct contact	X

X = Potential exposure route determined to be significant for this receptor; quantified in BERA.



Source: Weston Solutions, Inc, Figure 2-1 PEC QuOtient Summary

Legend

- Historic Surface Sediment Sample <Probable Effects Concentrations (PEC)
- Historic Subsurface Sediment Sample <PEC
- Historic Surface Sediment Sample > PECs
- Historic Subsurface Sediment Sample > PECs
- July 2007 Sediment Sample Location
- July 2007 Reference Upstream Sediment Sample Location

Figure 3
Sediment Sample Locations
Baseline Ecological Risk Assessment
Former Stanley Tools, Fowlersvill,e MI

APPENDIX A

SITE PHOTOGRAPHS

PHOTO 1
DATE: July 24, 2007
PHOTOGRAPHER: Jeff Stofferahn
TIME: 0935
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Log jam on river immediately downstream of confluence with north ditch, between stations 01 and 02. Looking downstream (N).

PHOTO 2
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Log jam on river immediately downstream of confluence with north ditch (right foreground, between stations 01 and 02) Looking NW.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 0935

PHOTO 3
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Area of community survey Station 1, approximately 70 feet downstream (N) of sediment sample location SD-J2-001. Looking SSW.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 0940

PHOTO 4 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007 TIME: 0940
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Collecting chemistry/bioassay sample at location SD-J2-001. Looking SW.

PHOTO 5
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Collecting macro invertebrate sample with Surber sampler at community survey Station 01. Looking W.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 1105

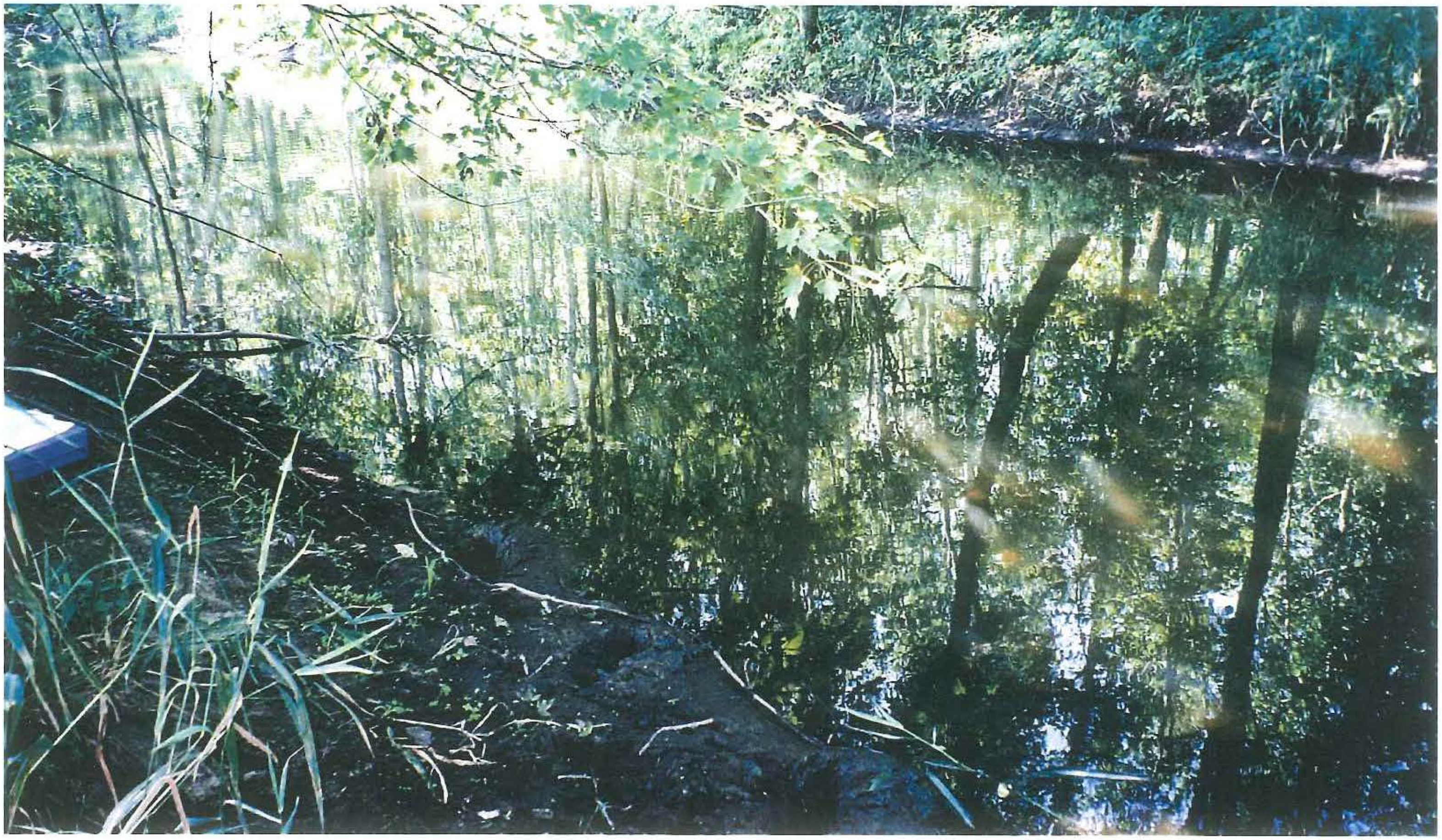


PHOTO 6
PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007
TIME: Approx. 1120
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Area of community survey Station 02, approximately 40 feet upstream (S) of sediment sample location SE/RC-9/1-002. Looking SSW.

PHOTO 7
PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007
TIME: Approx. 1120
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Area of community survey Station 2, approximately 40 feet upstream (S) of sediment sample location SE/RC-9/1-002. Looking W.

PHOTO 8
PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007
TIME: Approx. 1120
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of sediment sample SD-E3-003. Area of community survey Station 03 was located approximately 15 feet downstream (N). Looking NW.

PHOTO 9
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
PHOTOGRAPHER: Jeff Stofferahn
TIME: Approx. 1230
SUBJECT: Location of sediment sample SD-E3-003. Area of community survey Station 03 located approx. 15 feet downstream (north), in foreground. Looking SW.

PHOTO 10 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007 TIME: Approx. 1230
SUBJECT: Location of sediment sample SD-E3-003. Sampling at SE/RE-3/3-004 occurring in background. Looking S..

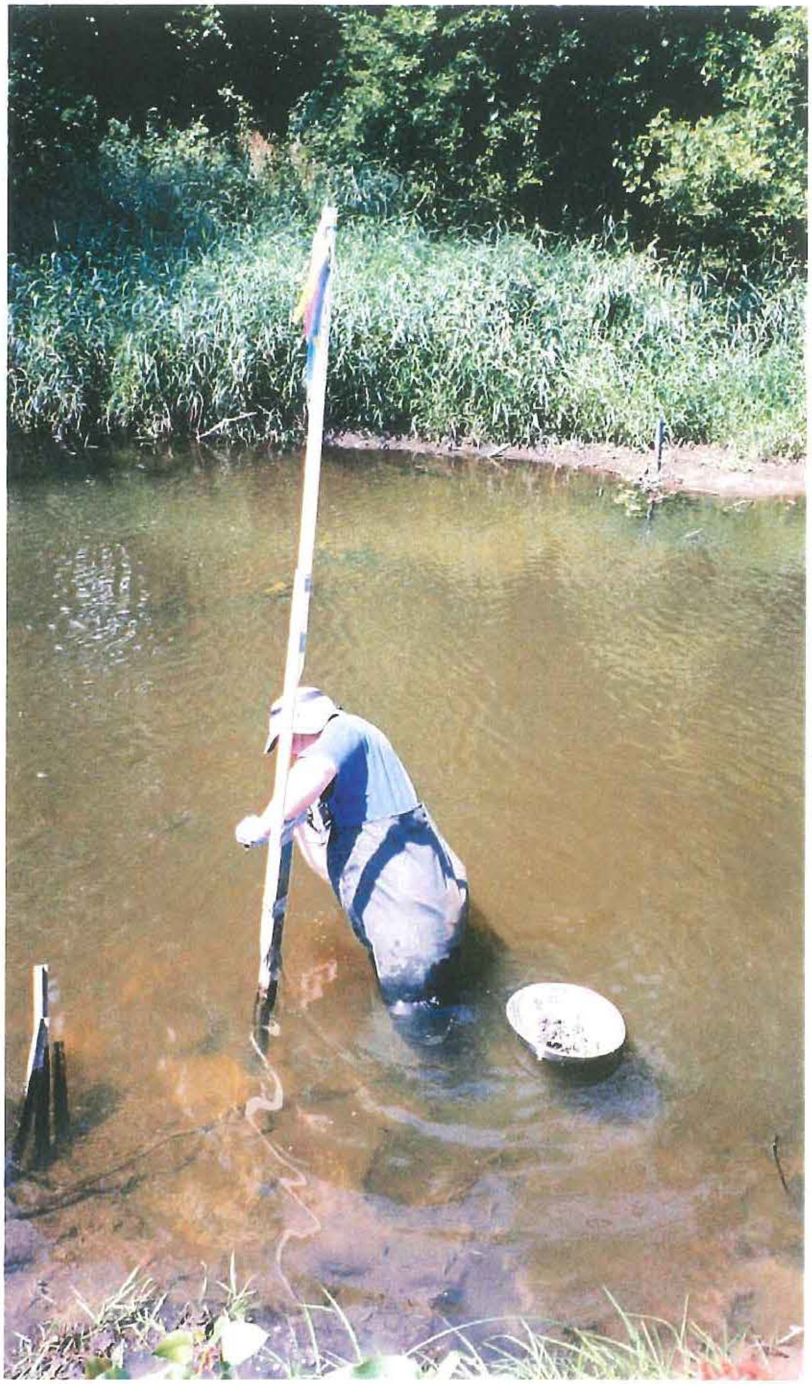


PHOTO 11 PHOTOGRAPHER: Rhonda Regester
DATE: July 24, 2007 TIME: 1305.
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Collecting sediment sample SD-C1-005. Looking W.

PHOTO 12
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Collecting sediment sample SD-A1-006. Looking W.

PHOTOGRAPHER: Mike Carlson
TIME: 1325

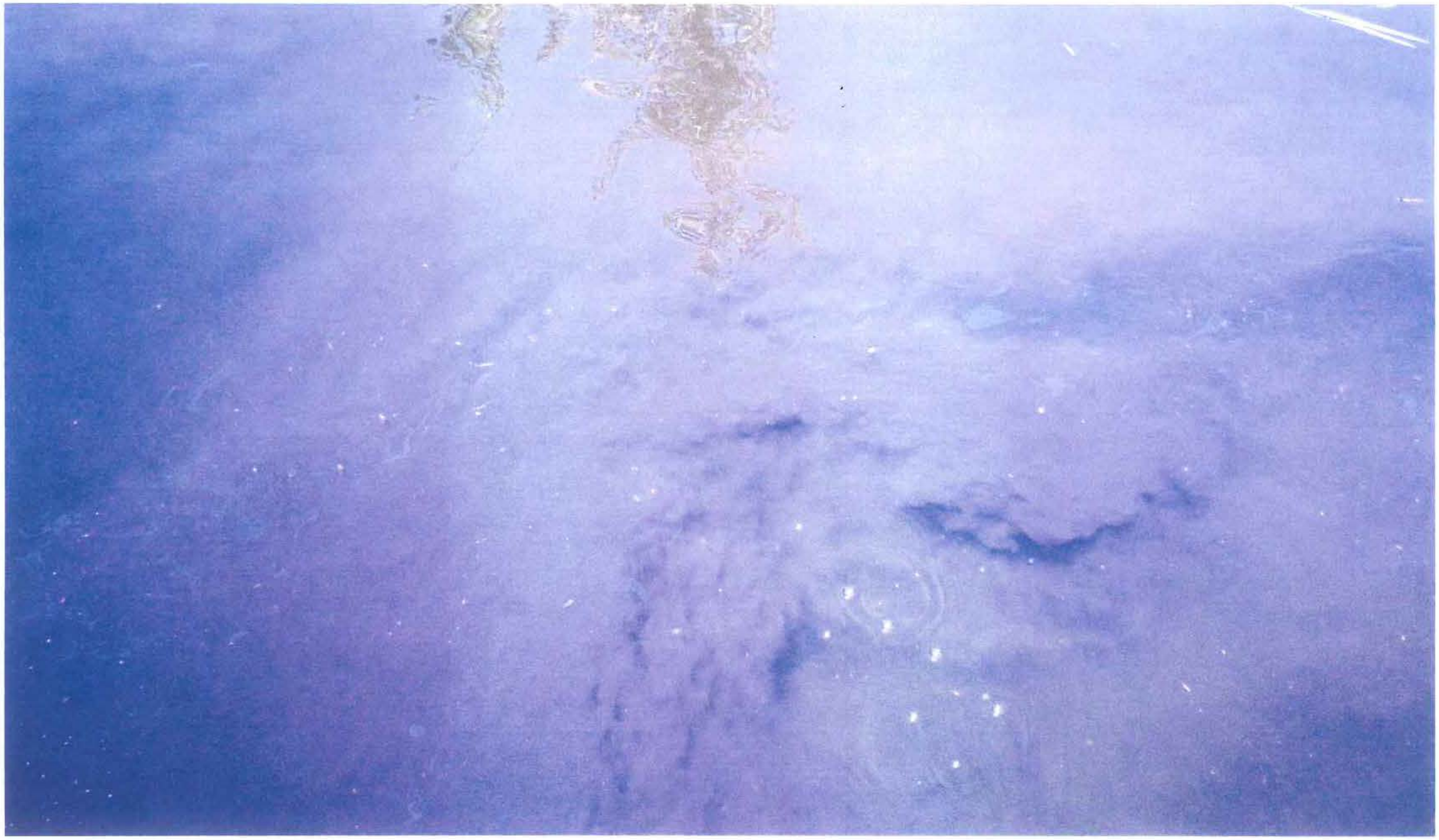


PHOTO 13
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Oily sheen on water after collecting sediment samples at SD-E2-003.

PHOTOGRAPHER: Rhonda Regester
TIME: Approx. 1400

PHOTO 14
PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007
TIME: 1405
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of community survey Station 04, approx. 20 feet downstream (north) of sample SE-RE-3-3-004 (stake in river, left side of photo). Looking SSW.

PHOTO 15
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of community survey Station04, approx. 20 feet downstream (north) of sediment sample SE-RE-3-3-004 (stake in river, center of photo). Looking S.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 1405

PHOTO 16
DATE: July 24, 2007
PHOTOGRAPHER: Jeff Stofferahn
TIME: 1405
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of community survey Station 04, approx. 20 feet downstream (north) of sample sediment SE-RE-3-3-004 (near stake in river). Location of sediment sample SD-E2-003 at stake in background. Looking N.

PHOTO 17 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007 TIME: 1535
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of sediment sample SD-C1-005. Looking W.

PHOTO 18
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of sediment sample SD-C1-005. Looking SSW.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 1535

PHOTO 19
DATE: July 24, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of sediment sample SD-C1-005.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 1535

PHOTO 20
DATE: July 25, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Reference sediment sample location SD-007, looking SW. Community survey station 07 collected approximately 100 feet upstream (S).

PHOTOGRAPHER: Jeff Stofferahn
TIME: 0945

PHOTO 21
DATE: July 25, 2007
PHOTOGRAPHER: Jeff Stofferahn
TIME: 0945
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Reference sediment sample location SD-007, looking NW. Community survey station 07 collected approximately 100 feet upstream (S).

PHOTO 22 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: 0945
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: View of lowland deciduous bottomland forest adjacent to River, east of reference sample location SD-007, looking E.

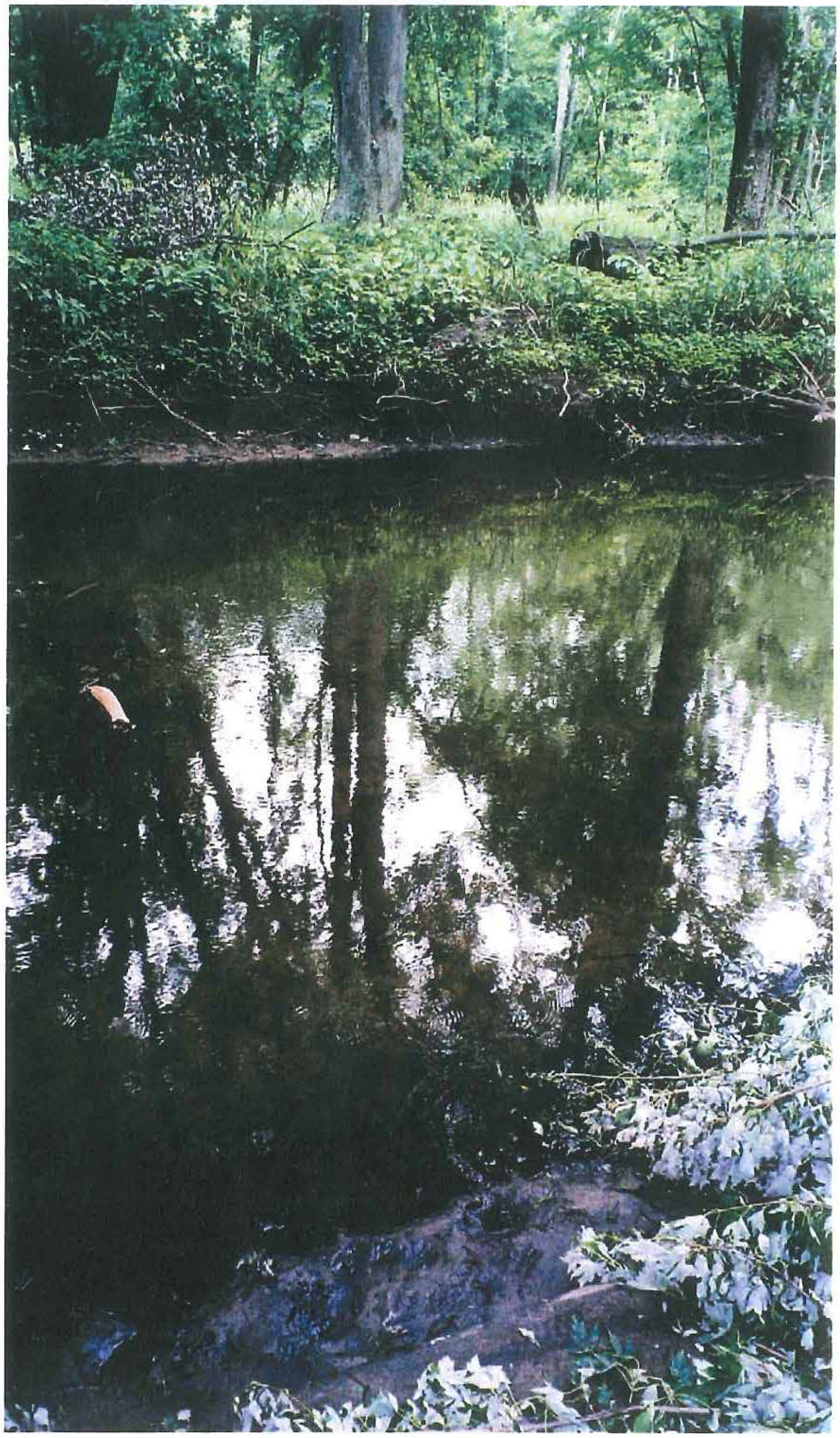


PHOTO 23 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: 0955
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Community survey Station 07, looking WNW.

PHOTO 24
DATE: July 25, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Community survey Station 07, looking WNW.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 0955

PHOTO 25
DATE: July 25, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: View of large open marsh in middle of bottomland forest, east of River, north of Interstate I-96.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 0945

PHOTO 26
DATE: July 25, 2007
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Collecting samples at Community Survey Station 08. This location is approximately 600 stream-feet downstream of sediment reference sample SD-008.

PHOTOGRAPHER: Jeff Stofferahn
TIME: 0945

PHOTO 27 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1000
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of Community Survey Station 08. Looking SW.

PHOTO 28 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1000
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of Community Survey Station 08. Looking SW.

PHOTO 29 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1000
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: View of river upstream of Community Survey Station 08. Looking S.

PHOTO 30 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1015
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: River upstream of Community Survey Station 08 (further upstream from photo 29). Area of shallow riffles and floating and emergent vegetation. Looking ESE

PHOTO 31
PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007
TIME: Approx. 1015
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: River upstream of Community Survey Station 08 (further upstream from photo 28). Area of shallow riffles and floating and emergent vegetation. Looking ESE

PHOTO 32 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1015
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Close-up of vegetation in riffle area (*Valesnaria* and *Sagittaria*), upstream of Community Survey Station 08.

PHOTO 33 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1350
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of sediment sample SE-RC-13/1-008. Looking W.

PHOTO 34 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1430
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Location of Sediment sample SD-A1-006 near SW corner of the former Stanley site. Community Survey Station 06 placed approximately 40 feet north of sediment sample. Looking SSW.

PHOTO 35 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 25, 2007 TIME: Approx. 1600
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: View of former Stanley Site, looking E from river. Wetland area is a low portion of site that drains to the river.

PHOTO 36 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007 TIME: Approx. 1430
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Photograph of wood frog (*Rana silvatica*) on emergent log along river bank near location of community survey station 04.
(Note, image is cropped and enlarged from electronic copy of original film photograph)

PHOTO 37 PHOTOGRAPHER: Jeff Stofferahn
DATE: July 24, 2007 TIME: Approx. 1430
SITE: Former Stanley Tool Site, Fowlerville, Michigan
SUBJECT: Photograph of leopard frog (*Rana pipiens*) on river bank near location of community survey station 04.
(Note, image is cropped and enlarged from electronic copy of original film photograph)

APPENDIX B

SEDIMENT CHEMISTRY DATA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Phone: (847) 808-7766
Fax: (847) 808-7772

09 August 2007

Lab ID: BQG0250

Pat Thomson
Entact
1010 Executive Ct. Suite 280
Westmont, IL 60559

RE: Former Stanley Tools

Enclosed are the results of analyses for samples received by the laboratory on 07/27/07. The sample results relate only to the tested analytes of interest and to the sample as received by the laboratory. At the time of analysis, the laboratory was in compliance with current NELAP standards and held accreditation for all analyses performed unless noted by a qualifier. The laboratory's Illinois NELAP accreditation number is 100261.

This report can not be reproduced, except in full, without written approval from the laboratory. If you have any questions concerning this report, please feel free to contact Jim Knapp or Margaret Kniest.

Sincerely,

TestAmerica Analytical Testing Corporation

James Knapp
Laboratory Director

Myra Kunas
Quality Assurance Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Phone: (847) 808-7766
Fax: (847) 808-7772

:ntact
1010 Executive Ct. Suite 280
Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SD-J2-001	BQG0250-01	Soil	07/24/07 10:06	07/27/07 12:04
SD-J2-001/FD	BQG0250-02	Soil	07/24/07 10:06	07/27/07 12:04
SE/RC-9/1-002	BQG0250-03	Soil	07/24/07 10:15	07/27/07 12:04
SD-E2-003	BQG0250-04	Soil	07/24/07 10:52	07/27/07 12:04
SE/RE-3/3-004	BQG0250-05	Soil	07/24/07 11:34	07/27/07 12:04
SD-C1-005	BQG0250-06	Soil	07/24/07 13:05	07/27/07 12:04
SD-A1-006	BQG0250-07	Soil	07/24/07 13:26	07/27/07 12:04
SD-007	BQG0250-08	Soil	07/25/07 09:40	07/27/07 12:04
SE/RC-13/1-008	BQG0250-09	Soil	07/25/07 10:20	07/27/07 12:04

Sample Receipt Notes

Please note that the chain of custody (COC) included with this report is considered part of the report. The data user should review any comments or notes made on the COC. Any receipt issues found by the laboratory that are not noted on the COC will be stated below.

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Phone: (847) 808-7766
Fax: (847) 808-7772

Entact	Project: Former Stanley Tools	
1010 Executive Ct. Suite 280	Project Number: [none]	Lab ID: BQG0250
Westmont, IL 60559	Project Manager: Pat Thomson	Reported: 08/09/07 15:08

Total Metals by EPA 6000/7000 Series Methods

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-J2-001 (BQG0250-01) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
Arsenic	**5.04**	3.79	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.757	"	"	"	"	"	"	
Chromium	**11.3**	1.51	"	"	"	"	"	"	
Copper	**14.7**	3.79	"	"	"	"	"	"	
Nickel	**8.04**	3.79	"	"	"	"	"	"	
Lead	**4.16**	3.79	"	"	"	"	"	"	
Zinc	**29.7**	7.57	"	"	"	"	"	"	QC
SD-J2-001/FD (BQG0250-02) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
Arsenic	**6.28**	3.53	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.706	"	"	"	"	"	"	
Chromium	**13.5**	1.41	"	"	"	"	"	"	
Copper	**12.5**	3.53	"	"	"	"	"	"	
Nickel	**8.62**	3.53	"	"	"	"	"	"	
Lead	**4.18**	3.53	"	"	"	"	"	"	
Zinc	**31.4**	7.06	"	"	"	"	"	"	QC
SE/RC-9/1-002 (BQG0250-03) Soil Sampled: 07/24/07 10:15 Received: 07/27/07 12:04									
Arsenic	**12.8**	3.40	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.679	"	"	"	"	"	"	
Chromium	**13.2**	1.36	"	"	"	"	"	"	
Copper	**11.7**	3.40	"	"	"	"	"	"	
Nickel	**6.56**	3.40	"	"	"	"	"	"	
Lead	**9.18**	3.40	"	"	"	"	"	"	
Zinc	**29.6**	6.79	"	"	"	"	"	"	QC

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1010 Executive Ct. Suite 280
Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Total Metals by EPA 6000/7000 Series Methods

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-E2-003 (BQG0250-04) Soil Sampled: 07/24/07 10:52 Received: 07/27/07 12:04									
Arsenic	**10.7**	4.10	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.821	"	"	"	"	"	"	
Chromium	**112**	1.64	"	"	"	"	"	"	
Copper	**133**	4.10	"	"	"	"	"	"	
Nickel	**43.5**	4.10	"	"	"	"	"	"	
Lead	**789**	4.10	"	"	"	"	"	"	
Zinc	**158**	8.21	"	"	"	"	"	"	QC
SE/RE-3/3-004 (BQG0250-05) Soil Sampled: 07/24/07 11:34 Received: 07/27/07 12:04									
Arsenic	ND	3.35	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.669	"	"	"	"	"	"	
Chromium	**7.27**	1.34	"	"	"	"	"	"	
Copper	**9.17**	3.35	"	"	"	"	"	"	
Nickel	**6.64**	3.35	"	"	"	"	"	"	
Lead	**4.03**	3.35	"	"	"	"	"	"	
Zinc	**27.3**	6.69	"	"	"	"	"	"	QC
SD-C1-005 (BQG0250-06) Soil Sampled: 07/24/07 13:05 Received: 07/27/07 12:04									
Arsenic	**10.9**	4.10	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.820	"	"	"	"	"	"	
Chromium	**77.2**	1.64	"	"	"	"	"	"	
Copper	**107**	4.10	"	"	"	"	"	"	
Nickel	**267**	4.10	"	"	"	"	"	"	
Lead	**11.2**	4.10	"	"	"	"	"	"	
Zinc	**675**	8.20	"	"	"	"	"	"	QC

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Entact 1010 Executive Ct. Suite 280 Westmont, IL 60559	Project: Former Stanley Tools Project Number: [none] Project Manager: Pat Thomson	Lab ID: BQG0250 Reported: 08/09/07 15:08

Total Metals by EPA 6000/7000 Series Methods

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-A1-006 (BQG0250-07) Soil Sampled: 07/24/07 13:26 Received: 07/27/07 12:04									
Arsenic	**8.64**	4.24	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.848	"	"	"	"	"	"	
Chromium	**133**	1.70	"	"	"	"	"	"	
Copper	**97.0**	4.24	"	"	"	"	"	"	
Nickel	**57.9**	4.24	"	"	"	"	"	"	
Lead	**15.1**	4.24	"	"	"	"	"	"	
Zinc	**527**	8.48	"	"	"	"	"	"	QC
SD-007 (BQG0250-08) Soil Sampled: 07/25/07 09:40 Received: 07/27/07 12:04									
Arsenic	ND	3.42	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.683	"	"	"	"	"	"	
Chromium	**3.27**	1.37	"	"	"	"	"	"	
Copper	ND	3.42	"	"	"	"	"	"	
Nickel	ND	3.42	"	"	"	"	"	"	
Lead	ND	3.42	"	"	"	"	"	"	
Zinc	**10.1**	6.83	"	"	"	"	"	"	QC
SE/RC-13/1-008 (BQG0250-09) Soil Sampled: 07/25/07 10:20 Received: 07/27/07 12:04									
Arsenic	**7.11**	3.39	mg/kg dry	1	7070427	07/30/07	08/01/07	EPA 6010B	
Cadmium	ND	0.678	"	"	"	"	"	"	
Chromium	**6.61**	1.36	"	"	"	"	"	"	
Copper	**9.29**	3.39	"	"	"	"	"	"	
Nickel	**9.16**	3.39	"	"	"	"	"	"	
Lead	**4.64**	3.39	"	"	"	"	"	"	
Zinc	**21.7**	6.78	"	"	"	"	"	"	QC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Entact 1010 Executive Ct. Suite 280 Westmont, IL 60559	Project: Former Stanley Tools Project Number: [none] Project Manager: Pat Thomson	**Lab ID:** BQG0250 **Reported:** 08/09/07 15:08

Polychlorinated Biphenyls by EPA Method 8082

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-J2-001 (BQG0250-01) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
PCB-1016	ND	45.0	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	45.0	"	"	"	"	"	"	
PCB-12:2	ND	45.0	"	"	"	"	"	"	
PCB-1242	ND	45.0	"	"	"	"	"	"	
PCB-1248	ND	45.0	"	"	"	"	"	"	
PCB-1254	ND	45.0	"	"	"	"	"	"	
PCB-1260	ND	45.0	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*35.5 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*37.7 %*	*10-110*		"	"	"	"	"	
SD-J2-001/FD (BQG0250-02) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
PCB-1016	ND	31.1	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	31.1	"	"	"	"	"	"	
PCB-1232	ND	31.1	"	"	"	"	"	"	
PCB-1242	ND	31.1	"	"	"	"	"	"	
PCB-1248	ND	31.1	"	"	"	"	"	"	
'CB-1254	ND	31.1	"	"	"	"	"	"	
,CB-1260	ND	31.1	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*40.5 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*33.9 %*	*10-110*		"	"	"	"	"	
SE/RC-9/1-002 (BQG0250-03) Soil Sampled: 07/24/07 10:15 Received: 07/27/07 12:04									
PCB-1016	ND	30.9	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	30.9	"	"	"	"	"	"	
PCB-1232	ND	30.9	"	"	"	"	"	"	
PCB-1242	ND	30.9	"	"	"	"	"	"	
PCB-1248	ND	30.9	"	"	"	"	"	"	
PCB-1254	ND	30.9	"	"	"	"	"	"	
PCB-1260	ND	30.9	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*44.0 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*37.1 %*	*10-110*		"	"	"	"	"	

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Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polychlorinated Biphenyls by EPA Method 8082

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-E2-003 (BQG0250-04) Soil Sampled: 07/24/07 10:52 Received: 07/27/07 12:04									
PCB-1016	ND	29.9	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	29.9	"	"	"	"	"	"	
PCB-1232	ND	29.9	"	"	"	"	"	"	
PCB-1242	ND	29.9	"	"	"	"	"	"	
PCB-1248	ND	29.9	"	"	"	"	"	"	
PCB-1254	ND	29.9	"	"	"	"	"	"	
PCB-1260	ND	29.9	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*28.7 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*30.1 %*	*10-110*		"	"	"	"	"	
SE/RE-3/3-004 (BQG0250-05) Soil Sampled: 07/24/07 11:34 Received: 07/27/07 12:04									
PCB-1016	ND	26.3	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	26.3	"	"	"	"	"	"	
PCB-1232	ND	26.3	"	"	"	"	"	"	
PCB-1242	ND	26.3	"	"	"	"	"	"	
PCB-1248	ND	26.3	"	"	"	"	"	"	
PCB-1254	ND	26.3	"	"	"	"	"	"	
PCB-1260	ND	26.3	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*39.7 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*34.7 %*	*10-110*		"	"	"	"	"	
SD-C1-005 (BQG0250-06) Soil Sampled: 07/24/07 13:05 Received: 07/27/07 12:04									
PCB-1016	ND	29.2	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	29.2	"	"	"	"	"	"	
PCB-1232	ND	29.2	"	"	"	"	"	"	
PCB-1242	ND	29.2	"	"	"	"	"	"	
PCB-1248	ND	29.2	"	"	"	"	"	"	
PCB-1254	ND	29.2	"	"	"	"	"	"	
PCB-1260	ND	29.2	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*33.8 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*31.3 %*	*10-110*		"	"	"	"	"	

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Entact
1010 Executive Ct. Suite 280
Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polychlorinated Biphenyls by EPA Method 8082

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-A1-006 (BQG0250-07) Soil Sampled: 07/24/07 13:26 Received: 07/27/07 12:04									
PCB-1016	ND	29.6	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	29.6	"	"	"	"	"	"	
PCB-1232	ND	29.6	"	"	"	"	"	"	
PCB-1242	ND	29.6	"	"	"	"	"	"	
PCB-1248	ND	29.6	"	"	"	"	"	"	
PCB-1254	ND	29.6	"	"	"	"	"	"	
PCB-1260	ND	29.6	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*31.2 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*29.2 %*	*10-110*		"	"	"	"	"	
SD-007 (BQG0250-08) Soil Sampled: 07/25/07 09:40 Received: 07/27/07 12:04									
PCB-1016	ND	42.2	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	42.2	"	"	"	"	"	"	
PCB-1232	ND	42.2	"	"	"	"	"	"	
PCB-1242	ND	42.2	"	"	"	"	"	"	
PCB-1248	ND	42.2	"	"	"	"	"	"	
PCB-1254	ND	42.2	"	"	"	"	"	"	
PCB-1260	ND	42.2	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*46.3 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*44.7 %*	*10-110*		"	"	"	"	"	
SE/RC-13/1-008 (BQG0250-09) Soil Sampled: 07/25/07 10:20 Received: 07/27/07 12:04									
PCB-1016	ND	28.9	ug/kg dry	10	7080076	08/06/07	08/08/07	EPA 8082	
PCB-1221	ND	28.9	"	"	"	"	"	"	
PCB-1232	ND	28.9	"	"	"	"	"	"	
PCB-1242	ND	28.9	"	"	"	"	"	"	
PCB-1248	ND	28.9	"	"	"	"	"	"	
PCB-1254	ND	28.9	"	"	"	"	"	"	
PCB-1260	ND	28.9	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene	*47.7 %*	*20-110*		"	"	"	"	"	
Surrogate: Decachlorobiphenyl	*50.3 %*	*10-110*		"	"	"	"	"	

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TestAmerica

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1010 Executive Ct. Suite 280
Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-J2-001 (BQG0250-01) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									**QC**
Acenaphthene	ND	1320	ug/kg dry	10	7080074	08/06/07	08/06/07	EPA 8310	
Acenaphthylene	ND	2650	"	"	"	"	"	"	O11
Anthracene	ND	1320	"	"	"	"	"	"	
Benz (a) anthracene	ND	661	"	"	"	"	"	"	
Benzo (a) pyrene	ND	66.1	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	661	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1320	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1320	"	"	"	"	"	"	
Chrysene	ND	1320	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	66.1	"	"	"	"	"	"	
Fluoranthene	ND	1320	"	"	"	"	"	"	
Fluorene	ND	1320	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	661	"	"	"	"	"	"	O11
Naphthalene	ND	1320	"	"	"	"	"	"	
Phenanthrene	ND	1320	"	"	"	"	"	"	
Pyrene	ND	1320	"	"	"	"	"	"	
Surrogate: Carbazole	*54.6 %*	*30-110*		"	"	"	"	"	
SD-J2-001/FD (BQG0250-02) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									**QC**
Acenaphthene	ND	1410	ug/kg dry	10	7080074	08/06/07	08/06/07	EPA 8310	
Acenaphthylene	ND	2820	"	"	"	"	"	"	O11
Anthracene	ND	1410	"	"	"	"	"	"	
Benz (a) anthracene	ND	706	"	"	"	"	"	"	
Benzo (a) pyrene	ND	70.6	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	706	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1410	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1410	"	"	"	"	"	"	
Chrysene	ND	1410	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	70.6	"	"	"	"	"	"	
Fluoranthene	ND	1410	"	"	"	"	"	"	
Fluorene	ND	1410	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	706	"	"	"	"	"	"	O11
Naphthalene	ND	1410	"	"	"	"	"	"	
Phenanthrene	ND	1410	"	"	"	"	"	"	
Pyrene	ND	1410	"	"	"	"	"	"	
Surrogate: Carbazole	*69.9 %*	*30-110*		"	"	"	"	"	

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1010 Executive Ct. Suite 280
Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SE/RC-9/1-002 (BQG0250-03) Soil Sampled: 07/24/07 10:15 Received: 07/27/07 12:04									QC
Acenaphthene	ND	1190	ug/kg dry	10	7080074	08/06/07	08/06/07	EPA 8310	
Acenaphthylene	ND	2370	"	"	"	"	"	"	O11
Anthracene	ND	1190	"	"	"	"	"	"	
Benz (a) anthracene	ND	593	"	"	"	"	"	"	
Benzo (a) pyrene	**78.7**	59.3	"	"	"	"	"	"	O10
Benzo (b) fluoranthene	ND	593	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1190	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1190	"	"	"	"	"	"	
Chrysene	ND	1190	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	59.3	"	"	"	"	"	"	
Fluoranthene	ND	1190	"	"	"	"	"	"	
Fluorene	ND	1190	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	593	"	"	"	"	"	"	O11
Naphthalene	ND	1190	"	"	"	"	"	"	
Phenanthrene	ND	1190	"	"	"	"	"	"	
Pyrene	ND	1190	"	"	"	"	"	"	
Surrogate: Carbazole	*55.9 %*	*30-110*		"	"	"	"	"	
SD-E2-003 (BQG0250-04) Soil Sampled: 07/24/07 10:52 Received: 07/27/07 12:04									QC
Acenaphthene	ND	1640	ug/kg dry	10	7080074	08/06/07	08/07/07	EPA 8310	
Acenaphthylene	ND	3280	"	"	"	"	"	"	O11
Anthracene	ND	1640	"	"	"	"	"	"	
Benz (a) anthracene	ND	821	"	"	"	"	"	"	
Benzo (a) pyrene	**82.5**	82.1	"	"	"	"	"	"	O10
Benzo (b) fluoranthene	ND	821	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1640	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1640	"	"	"	"	"	"	
Chrysene	ND	1640	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	82.1	"	"	"	"	"	"	
Fluoranthene	ND	1640	"	"	"	"	"	"	
Fluorene	ND	1640	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	821	"	"	"	"	"	"	O11
Naphthalene	ND	1640	"	"	"	"	"	"	
Phenanthrene	ND	1640	"	"	"	"	"	"	
Pyrene	ND	1640	"	"	"	"	"	"	
Surrogate: Carbazole	*70.9 %*	*30-110*		"	"	"	"	"	

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp

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Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SE/RE-3/3-004 (BQG0250-05) Soil Sampled: 07/24/07 11:34 Received: 07/27/07 12:04									**QC**
Acenaphthene	ND	1200	ug/kg dry	10	7080074	08/06/07	08/07/07	EPA 8310	
Acenaphthylene	ND	2410	"	"	"	"	"	"	O11
Anthracene	ND	1200	"	"	"	"	"	"	
Benz (a) anthracene	ND	602	"	"	"	"	"	"	
Benzo (a) pyrene	ND	60.2	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	602	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1200	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1200	"	"	"	"	"	"	
Chrysene	ND	1200	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	60.2	"	"	"	"	"	"	
Fluoranthene	ND	1200	"	"	"	"	"	"	
Fluorene	ND	1200	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	602	"	"	"	"	"	"	O11
Naphthalene	ND	1200	"	"	"	"	"	"	
Phenanthrene	ND	1200	"	"	"	"	"	"	
Pyrene	ND	1200	"	"	"	"	"	"	
Surrogate: Carbazole	*69.8 %*	*30-110*		"	"	"	"	"	
SD-C1-005 (BQG0250-06) Soil Sampled: 07/24/07 13:05 Received: 07/27/07 12:04									**QC**
Acenaphthene	ND	1640	ug/kg dry	10	7080074	08/06/07	08/07/07	EPA 8310	
Acenaphthylene	ND	3280	"	"	"	"	"	"	O11
Anthracene	ND	1640	"	"	"	"	"	"	
Benz (a) anthracene	ND	820	"	"	"	"	"	"	
Benzo (a) pyrene	ND	82.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	820	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1640	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1640	"	"	"	"	"	"	
Chrysene	ND	1640	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	82.0	"	"	"	"	"	"	
Fluoranthene	ND	1640	"	"	"	"	"	"	
Fluorene	ND	1640	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	820	"	"	"	"	"	"	O11
Naphthalene	ND	1640	"	"	"	"	"	"	
Phenanthrene	ND	1640	"	"	"	"	"	"	
Pyrene	ND	1640	"	"	"	"	"	"	
Surrogate: Carbazole	*67.7 %*	*30-110*		"	"	"	"	"	

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Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-A1-006 (BQG0250-07) Soil Sampled: 07/24/07 13:26 Received: 07/27/07 12:04									**QC**
Acenaphthene	ND	1360	ug/kg dry	10	7080074	08/06/07	08/07/07	EPA 8310	
Acenaphthylene	ND	2730	"	"	"	"	"	"	O11
Anthracene	ND	1360	"	"	"	"	"	"	
Benz (a) anthracene	ND	682	"	"	"	"	"	"	
Benzo (a) pyrene	**111**	68.2	"	"	"	"	"	"	O10
Benzo (b) fluoranthene	ND	682	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1360	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1360	"	"	"	"	"	"	
Chrysene	ND	1360	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	68.2	"	"	"	"	"	"	
Fluoranthene	ND	1360	"	"	"	"	"	"	
Fluorene	ND	1360	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	682	"	"	"	"	"	"	O11
Naphthalene	ND	1360	"	"	"	"	"	"	
Phenanthrene	ND	1360	"	"	"	"	"	"	
Pyrene	ND	1360	"	"	"	"	"	"	
Surrogate: Carbazole	*65.6 %*	*30-110*		"	"	"	"	"	
SD-007 (BQG0250-08) Soil Sampled: 07/25/07 09:40 Received: 07/27/07 12:04									**QC**
Acenaphthene	ND	1220	ug/kg dry	10	7080074	08/06/07	08/07/07	EPA 8310	
Acenaphthylene	ND	2440	"	"	"	"	"	"	O11
Anthracene	ND	1220	"	"	"	"	"	"	
Benz (a) anthracene	ND	610	"	"	"	"	"	"	
Benzo (a) pyrene	**155**	61.0	"	"	"	"	"	"	O10
Benzo (b) fluoranthene	ND	610	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1220	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1220	"	"	"	"	"	"	
Chrysene	ND	1220	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	61.0	"	"	"	"	"	"	
Fluoranthene	ND	1220	"	"	"	"	"	"	
Fluorene	ND	1220	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	610	"	"	"	"	"	"	O11
Naphthalene	ND	1220	"	"	"	"	"	"	
Phenanthrene	ND	1220	"	"	"	"	"	"	
Pyrene	ND	1220	"	"	"	"	"	"	
Surrogate: Carbazole	*73.0 %*	*30-110*		"	"	"	"	"	

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Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SE/RC-13/1-008 (BQG0250-09) Soil	**Sampled: 07/25/07 10:20**	**Received: 07/27/07 12:04**							**QC**
Acenaphthene	ND	1220	ug/kg dry	10	7080074	08/06/07	08/07/07	EPA 8310	
Acenaphthylene	ND	2440	"	"	"	"	"	"	O11
Anthracene	ND	1220	"	"	"	"	"	"	
Benz (a) anthracene	ND	610	"	"	"	"	"	"	
Benzo (a) pyrene	ND	61.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	610	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1220	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1220	"	"	"	"	"	"	
Chrysene	ND	1220	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	61.0	"	"	"	"	"	"	
Fluoranthene	ND	1220	"	"	"	"	"	"	
Fluorene	ND	1220	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	610	"	"	"	"	"	"	O11
Naphthalene	ND	1220	"	"	"	"	"	"	
Phenanthrene	ND	1220	"	"	"	"	"	"	
Pyrene	ND	1220	"	"	"	"	"	"	
Surrogate: Carbazole	*69.8 %*	*30-110*		"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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:Intact 1010 Executive Ct. Suite 280 Westmont, IL 60559	Project: Former Stanley Tools Project Number: [none] Project Manager: Pat Thomson	Lab ID: BQG0250 Reported: 08/09/07 15:08

Percent Solids

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-J2-001 (BQG0250-01) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
% Solids	**66.0**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SD-J2-001/FD (BQG0250-02) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
% Solids	**70.9**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SE/RC-9/1-002 (BQG0250-03) Soil Sampled: 07/24/07 10:15 Received: 07/27/07 12:04									
% Solids	**73.6**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SD-E2-003 (BQG0250-04) Soil Sampled: 07/24/07 10:52 Received: 07/27/07 12:04									
% Solids	**60.9**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SE/RE-3/3-004 (BQG0250-05) Soil Sampled: 07/24/07 11:34 Received: 07/27/07 12:04									
% Solids	**74.7**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
:D-C1-005 (BQG0250-06) Soil Sampled: 07/24/07 13:05 Received: 07/27/07 12:04									
% Solids	**61.0**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SD-A1-006 (BQG0250-07) Soil Sampled: 07/24/07 13:26 Received: 07/27/07 12:04									
% Solids	**58.9**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SD-007 (BQG0250-08) Soil Sampled: 07/25/07 09:40 Received: 07/27/07 12:04									
% Solids	**73.2**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	
SE/RC-13/1-008 (BQG0250-09) Soil Sampled: 07/25/07 10:20 Received: 07/27/07 12:04									
% Solids	**73.8**	1.00	%	1	7070418	07/30/07	07/30/07	SW846 5035	

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Robin Promisel For Jim Knapp

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Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

General Chemistry Parameters

TestAmerica - Nashville, TN

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SD-J2-001 (BQG0250-01) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
Total Organic Carbon	**11900**	1000	mg/Kg dry	1	7080412	08/02/07	08/03/07	SW846 9060M	
SD-J2-001/FD (BQG0250-02) Soil Sampled: 07/24/07 10:06 Received: 07/27/07 12:04									
Total Organic Carbon	**12000**	1000	mg/Kg dry	1	7080412	08/02/07	08/03/07	SW846 9060M	
SE/RC-9/1-002 (BQG0250-03) Soil Sampled: 07/24/07 10:15 Received: 07/27/07 12:04									
Total Organic Carbon	**10200**	1000	mg/Kg dry	1	7080412	08/02/07	08/03/07	SW846 9060M	
SD-A1-006 (BQG0250-07) Soil Sampled: 07/24/07 13:26 Received: 07/27/07 12:04									
Total Organic Carbon	**20800**	1000	mg/Kg dry	1	7080412	08/02/07	08/03/07	SW846 9060M	

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Entact	Project: Former Stanley Tools	
1010 Executive Ct. Suite 280	Project Number: [none]	**Lab ID:** BQG0250
Westmont, IL 60559	Project Manager: Pat Thomson	**Reported:** 08/09/07 15:08

Total Metals by EPA 6000/7000 Series Methods - Quality Control

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7070427 - EPA 3050B										
Blank (7070427-BLK1)				Prepared: 07/30/07 Analyzed: 08/01/07						
Arsenic	ND	2.50	mg/kg wet							
Cadmium	ND	0.500	"							
Chromium	ND	1.00	"							
Copper	ND	2.50	"							
Nickel	ND	2.50	"							
Lead	ND	2.50	"							
Zinc	ND	5.00	"							
LCS (7070427-BS1)				Prepared: 07/30/07 Analyzed: 08/01/07						
Arsenic	19.0	2.50	mg/kg wet	20.0		94.8	82.7-110			
Cadmium	19.5	0.500	"	20.0		97.6	88.1-110			
Chromium	19.5	1.00	"	20.0		97.3	84.5-110			
Copper	19.7	2.50	"	20.0		98.7	86.1-110			
Nickel	20.2	2.50	"	20.0		101	90-110			
Lead	39.7	2.50	"	40.0		99.2	87.1-110			
Zinc	50.1	5.00	"	50.0		100	87.4-114			
Matrix Spike (7070427-MS1)	**Source: BQG0250-01**			Prepared: 07/30/07 Analyzed: 08/01/07						
Zinc	124	7.57	mg/kg dry	72.1	29.7	130	45.7-112			H
Cadmium	26.4	0.757	"	28.8	ND	91.6	63-110			
Chromium	38.9	1.51	"	28.8	11.3	95.9	52.5-110			
Copper	40.6	3.79	"	28.8	14.7	89.8	59.8-114			
Nickel	36.1	3.79	"	28.8	8.04	97.2	55.8-110			
Lead	58.0	3.79	"	57.7	4.16	93.4	51.5-110			
Arsenic	32.7	3.79	"	28.8	5.04	95.7	69.5-110			
Matrix Spike Dup (7070427-MSD1)	**Source: BQG0250-01**			Prepared: 07/30/07 Analyzed: 08/01/07						
Arsenic	31.8	3.79	mg/kg dry	28.3	5.04	94.6	69.5-110	2.55	18.1	
Cadmium	25.1	0.757	"	28.3	ND	88.5	63-110	5.38	17.7	
Chromium	38.9	1.51	"	28.3	11.3	97.7	52.5-110	0.0327	19.8	
Copper	42.4	3.79	"	28.3	14.7	98.1	59.8-114	4.50	21	
Nickel	36.8	3.79	"	28.3	8.04	102	55.8-110	2.02	23.4	
Lead	56.5	3.79	"	56.6	4.16	92.4	51.5-110	2.77	26.6	
Zinc	98.7	7.57	"	70.8	29.7	97.5	45.7-112	22.4	20.2	H

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Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7080076 - EPA 3550B										
Blank (7080076-BLK1)				Prepared: 08/06/07 Analyzed: 08/08/07						
PCB-1016	ND	25.0	ug/kg wet							
PCB-1221	ND	25.0	"							
PCB-1232	ND	25.0	"							
PCB-1242	ND	25.0	"							
PCB-1248	ND	25.0	"							
PCB-1254	ND	25.0	"							
PCB-1260	ND	25.0	"							
Surrogate: Tetrachloro-meta-xylene	*11.9*		*"*	*32.8*		*36.4*	*20-110*			
Surrogate: Decachlorobiphenyl	*19.9*		*"*	*32.8*		*60.6*	*10-110*			
LCS (7080076-BS1)				Prepared: 08/06/07 Analyzed: 08/08/07						
PCB-1016	47.0	25.0	ug/kg wet	81.1		57.9	30-110			
PCB-1260	54.0	25.0	"	81.1		66.6	25-110			
'urrogate: Tetrachloro-meta-xylene	*12.8*		*"*	*32.4*		*39.4*	*20-110*			
urrogate: Decachlorobiphenyl	*16.5*		*"*	*32.4*		*50.8*	*10-110*			
Matrix Spike (7080076-MS1)	**Source: BQG0250-01**			Prepared: 08/06/07 Analyzed: 08/08/07						
PCB-1016	60.2	28.4	ug/kg dry	125	ND	48.3	20-110			
PCB-1260	55.3	28.4	"	125	ND	44.4	20-110			
Surrogate: Tetrachloro-meta-xylene	*16.4*		*"*	*49.8*		*32.9*	*20-110*			
Surrogate: Decachlorobiphenyl	*16.4*		*"*	*49.8*		*33.0*	*10-110*			
Matrix Spike Dup (7080076-MSD1)	**Source: BQG0250-01**			Prepared: 08/06/07 Analyzed: 08/08/07						
PCB-1016	72.7	31.6	ug/kg dry	129	ND	56.6	20-110	18.9	40	
PCB-1260	70.3	31.6	"	129	ND	54.7	20-110	24.0	40	
Surrogate: Tetrachloro-meta-xylene	*19.0*		*"*	*51.4*		*36.9*	*20-110*			
Surrogate: Decachlorobiphenyl	*20.2*		*"*	*51.4*		*39.2*	*10-110*			

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Westmont, IL 60559	Project Manager: Pat Thomson	Reported:	08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310 - Quality Control

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7080074 - EPA 3550B										
Blank (7080074-BLK1)				Prepared: 08/06/07 Analyzed: 08/07/07						
Acenaphthene	ND	100	ug/kg wet							
Acenaphthylene	ND	200	"							
Anthracene	ND	100	"							
Benz (a) anthracene	ND	50.0	"							
Benzo (a) pyrene	ND	5.00	"							
Benzo (b) fluoranthene	ND	50.0	"							
Benzo (ghi) perylene	ND	100	"							
Benzo (k) fluoranthene	ND	100	"							
Chrysene	ND	100	"							
Dibenz (a,h) anthracene	ND	5.00	"							
Fluoranthene	ND	100	"							
Fluorene	ND	100	"							
Indeno (1,2,3-cd) pyrene	ND	50.0	"							O11
Naphthalene	ND	100	"							
Phenanthrene	ND	100	"							
Pyrene	ND	100	"							
Surrogate: Carbazole	*55.8*		*"*	*66.7*		*83.7*	*30-110*			
LCS (7080074-BS1)				Prepared: 08/06/07 Analyzed: 08/07/07						
Acenaphthene	68.5	100	ug/kg wet	132		51.9	30-110			
Acenaphthylene	62.9	200	"	132		47.6	30-110			
Anthracene	75.3	100	"	132		57.0	40-110			
Benz (a) anthracene	87.2	50.0	"	132		66.0	50-120			
Benzo (a) pyrene	106	5.00	"	132		80.2	40-110			O10
Benzo (b) fluoranthene	79.0	50.0	"	132		59.8	50-120			
Benzo (ghi) perylene	84.9	100	"	132		64.3	40-115			
Benzo (k) fluoranthene	82.9	100	"	132		62.8	50-120			
Chrysene	65.8	100	"	132		49.8	40-120			
Dibenz (a,h) anthracene	67.9	5.00	"	132		51.4	40-120			
Fluoranthene	80.2	100	"	132		60.7	40-110			
Fluorene	64.7	100	"	132		49.0	40-110			
Indeno (1,2,3-cd) pyrene	69.9	50.0	"	132		52.9	50-130			O11
Naphthalene	75.5	100	"	132		57.2	40-110			
Phenanthrene	68.5	100	"	132		51.9	40-110			
Pyrene	87.0	100	"	132		65.9	40-115			

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Phone: (847) 808-7766
Fax: (847) 808-7772

Entact
1010 Executive Ct. Suite 280
Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310 - Quality Control

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7080074 - EPA 3550B										
LCS (7080074-BS1)				Prepared: 08/06/07 Analyzed: 08/07/07						
Surrogate: Carbazole	*41.1*		*ug/kg wet*	*66.0*		*62.3*	*30-110*			
Matrix Spike (7080074-MS1)	**Source: BQG0250-01**			Prepared: 08/06/07 Analyzed: 08/07/07						
Acenaphthene	151	151	ug/kg dry	200	ND	75.2	20-120			
Acenaphthylene	131	303	"	200	ND	65.4	10-140			
Anthracene	170	151	"	200	ND	84.9	20-130			
Benz (a) anthracene	166	75.7	"	200	ND	82.7	25-120			
Benzo (a) pyrene	281	7.57	"	200	ND	141	40-120			H O10
Benzo (b) fluoranthene	161	75.7	"	200	ND	80.4	30-120			
Benzo (ghi) perylene	172	151	"	200	286	NR	20-125			L
Benzo (k) fluoranthene	145	151	"	200	ND	72.2	30-120			
Chrysene	140	151	"	200	ND	69.7	30-120			
Dibenz (a,h) anthracene	129	7.57	"	200	ND	64.5	30-110			
Fluoranthene	180	151	"	200	ND	89.9	30-110			
luorene	143	151	"	200	ND	71.3	40-130			
Indeno (1,2,3-cd) pyrene	158	75.7	"	200	ND	78.7	30-130			O11
Naphthalene	143	151	"	200	ND	71.4	30-130			
Phenanthrene	157	151	"	200	ND	78.5	20-120			
Pyrene	206	151	"	200	ND	103	20-120			
Surrogate: Carbazole	*68.6*		*"*	*100*		*68.5*	*30-110*			
Matrix Spike Dup (7080074-MSD1)	**Source: BQG0250-01**			Prepared: 08/06/07 Analyzed: 08/07/07						
Acenaphthene	147	151	ug/kg dry	207	ND	71.2	20-120	2.28	40	
Acenaphthylene	122	303	"	207	ND	59.0	10-140	7.09	40	
Anthracene	164	151	"	207	ND	79.2	20-130	3.74	40	
Benz (a) anthracene	151	75.7	"	207	ND	73.2	25-120	8.96	40	
Benzo (a) pyrene	245	7.57	"	207	ND	118	40-120	14.0	40	O10
Benzo (b) fluoranthene	147	75.7	"	207	ND	71.1	30-120	9.10	40	
Benzo (ghi) perylene	163	151	"	207	286	NR	20-125	5.36	40	L
Benzo (k) fluoranthene	136	151	"	207	ND	65.9	30-120	6.01	30	
Chrysene	127	151	"	207	ND	61.2	30-120	9.75	40	
Dibenz (a,h) anthracene	121	7.57	"	207	ND	58.5	30-110	6.46	40	
Fluoranthene	163	151	"	207	ND	78.6	30-110	10.1	40	
Fluorene	138	151	"	207	ND	66.6	40-130	3.55	40	
Indeno (1,2,3-cd) pyrene	147	75.7	"	207	ND	71.2	30-130	6.82	40	O11
Naphthalene	135	151	"	207	ND	65.2	30-130	5.92	40	

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

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Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

Polynuclear Aromatic Hydrocarbons by EPA Method 8310 - Quality Control

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7080074 - EPA 3550B										
Matrix Spike Dup (7080074-MSD1)	**Source: BQG0250-01**			Prepared: 08/06/07 Analyzed: 08/07/07						
Phenanthrene	148	151	ug/kg dry	207	ND	71.6	20-120	5.95	40	
Pyrene	189	151	"	207	ND	91.4	20-120	8.81	40	
Surrogate: Carbazole	*71.9*		*"*	*103*		*69.6*	*30-110*			

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp

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Project Number: [none]
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Lab ID: BQG0250
Reported: 08/09/07 15:08

Percent Solids - Quality Control

TestAmerica - Buffalo Grove, IL

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7070418 - General Prep										
Blank (7070418-BLK1)				Prepared & Analyzed: 07/30/07						
% Solids	ND	1.00	%							
Blank (7070418-BLK2)				Prepared & Analyzed: 07/30/07						
% Solids	ND	1.00	%							
Blank (7070418-BLK3)				Prepared & Analyzed: 07/30/07						
% Solids	ND	1.00	%							
Duplicate (7070418-DUP1)	**Source: BQG0242-01**			Prepared & Analyzed: 07/30/07						
% Solids	84.9	1.00	%		85.4			0.619	20	
Duplicate (7070418-DUP2)	**Source: BQG0242-02**			Prepared & Analyzed: 07/30/07						
% Solids	83.2	1.00	%		80.1			3.86	20	
Duplicate (7070418-DUP3)	**Source: BQG0242-03**			Prepared & Analyzed: 07/30/07						
% Solids	80.8	1.00	%		80.3			0.629	20	

Reviewed & Approved by: Robin S. Promisel

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Westmont, IL 60559

Project: Former Stanley Tools
Project Number: [none]
Project Manager: Pat Thomson

Lab ID: BQG0250
Reported: 08/09/07 15:08

General Chemistry Parameters - Quality Control

TestAmerica - Nashville, TN

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 7080412 - NO PREP										
Blank (7080412-BLK1)				Prepared: 08/02/07 Analyzed: 08/03/07						
Total Organic Carbon	ND	1000	mg/Kg dry							
LCS (7080412-BS1)				Prepared: 08/02/07 Analyzed: 08/03/07						
Total Organic Carbon	29000	1000	mg/Kg dry	29900		97	90-110			
Duplicate (7080412-DUP1)		**Source: NQG2796-02**		Prepared: 08/02/07 Analyzed: 08/03/07						
Total Organic Carbon	ND	1000	mg/Kg dry		ND				20	

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Phone: (847) 808-7766
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Entact	Project: Former Stanley Tools	
1010 Executive Ct. Suite 280	Project Number: [none]	Lab ID: BQG0250
Westmont, IL 60559	Project Manager: Pat Thomson	Reported: 08/09/07 15:08

Notes and Definitions

QC	The result for one or more quality control measurements associated with this sample did not meet the laboratory and/or source method acceptance criteria.
O11	The check standard that corresponds to this sample met the SW846 method requirements. However, it should be noted that the recovery for this individual compound in the check standard was below 85%.
O10	The check standard that corresponds to this sample met the SW846 method requirements. However, it should be noted that the recovery for this individual compound in the check standard was above 115%.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
L	This quality control measurement is below the laboratory established limit.
H	This quality control measurement is above the laboratory established limit.
^	The laboratory is not NELAP accredited for this analyte by the indicated matrix and method.
^^	The State of Illinois Accrediting Authority does not offer NELAP accreditation for this analyte by the indicated matrix and method.

Note: All analytes, by matrix and method, are accredited following current NELAP standards unless specifically noted by way of a qualifier listed above.

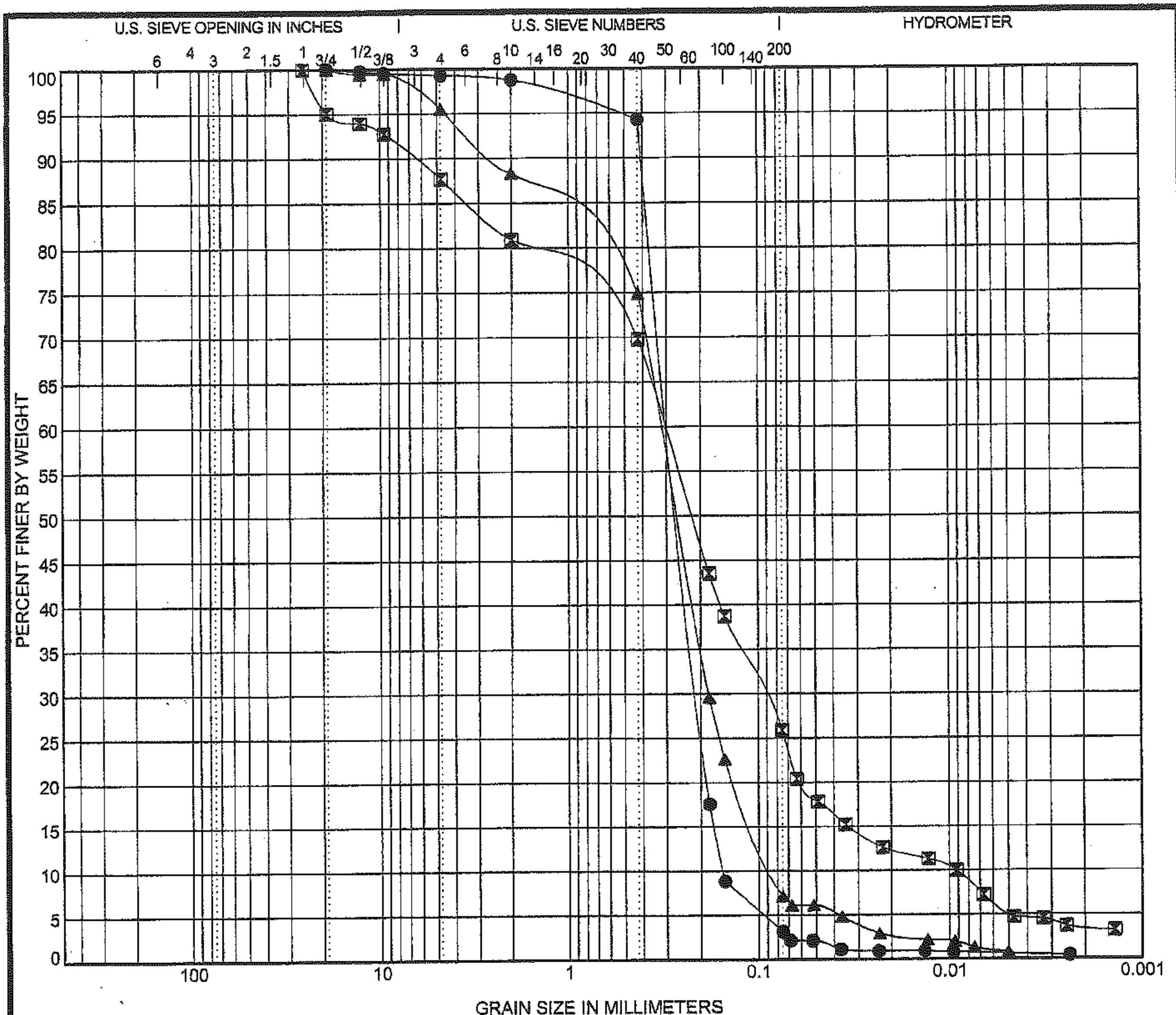
Note: All samples are reported on a wet weight basis unless otherwise noted.

TestAmerica--Buffalo Grove, IL Wisconsin DNR Certification Lab ID: 999917160
TestAmerica--Buffalo Grove, IL NELAP Primary Accreditation: Illinois #100261
TestAmerica--Buffalo Grove, IL NELAP Secondary Accreditation: New Jersey #IL001
TestAmerica--Nashville, TN NELAP Secondary Accreditation: Illinois #200010
TestAmerica--Dayton, OH NELAP Secondary Accreditation: Illinois #200008
TestAmerica--Watertown, WI NELAP Primary Accreditation: Illinois #100453
TestAmerica--Watertown, WI Wisconsin DNR Certification Lab ID: 128053530

ACCREDITED IN ACCORDANCE WITH nelac
NELAP accredited IL 100261

Reviewed & Approved by: Robin S. Promisel

Robin Promisel For Jim Knapp



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● SD-002	0.0	**POORLY GRADED SAND(SP)**	**NP**	**NP**	**NP**	**0.96**	**1.88**
⊠ SD-004	0.0					**3.10**	**33.56**
▲ SD-008	0.0	**POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**	**1.21**	**3.76**

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SD-002	0.0	**19**	**0.29**	**0.207**	**0.154**	**0.7**	**96.2**	**2.5**	**0.6**
⊠ SD-004	0.0	**25.4**	**0.309**	**0.094**	**0.009**	**12.3**	**61.8**	**20.7**	**5.1**
▲ SD-008	0.0	**19**	**0.321**	**0.182**	**0.085**	**4.5**	**88.3**	**6.3**	**0.8**

WEI GRAIN SIZE 3860201.GPJ US LAB.GDT 8/3/07

WEI
SINCE 1982
Wang Engineering
1145 Main Street
Lombard, IL 60148
Telephone: 630 953-9928
Fax: 630 953-9938

GRAIN SIZE DISTRIBUTION

Project: Stanley Tools

Location:

Number: 386-02-01

APPENDIX C

BIOASSAY LABORATORY RESULTS

Client: ENTACT
Project ID: ENTA0701
Client Sample ID: Stanley Tools CMIP
Sample Period: 7/24/07-7/25/07

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Sediment Toxicity

Submitted To:	Prepared By:
Mr. Jeff Stofferahn ENTACT 1010 Executive Court, Suite 280 Westmont, IL60559	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Biological Summary Data		Laboratory Treatment ID/Client Field Sample ID								
		6	1	2	3	4	5	7	8	9
Species-Method	Endpoint	Lab Ctrl	SD-A1 006	SE/RC 9/1-002	SD-J2 001	SE/RE 3/3-004	SE/RC 13/1-008	SD.C1 005	SD 007	SD.E2 003
H. azteca	Survival (%):	94	91	91	95	96	95	79	94	0
EPA 100.1	Weight (mg):	0.534	0.405	0.437	0.365	0.372	0.343*	0.293*	0.417	NA

*Significantly different ($p = 0.05$) from reference site SD 007. Growth in all treatments was significantly lower than in the laboratory control group. Survival in sediment SD.E2 003 was significantly depressed compared to both reference sites (SD 007 & SE/RC 13/1-008) and lab control.

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Organism Age/Stage	Acclimation Temp.	Acclimation Water	Test Aerated?
H. azteca EPA 100.1	8/1/07 1030 8/29/07 0800-1400	Ches. Cult.	7 days	23° C	Mod. Hard Well Water	No

Sediment/Overlying Water Data	Sediment ID									
Water Quality (Units)	6 Ctrl	1 006	2 9/1-002	3 001	4 3/3-004	5 13/1-008	7 005	8 007	9 003	Overly. Water
Arrival Temp (°C)	1	2	2	2	2	2	2	2	2	NA
Conductivity (µS/cm)										310
pH (S.U.)	6.25	6.91	6.81	7.02	6.78	6.85	6.86	6.88	6.85	7.98
Diss. Oxygen (mg/l)										8.3
Total Hard.(mg/l as $CaCO_3$)										110
Alkalinity(mg/las$CaCO_3$)										124
Percent water	60.6	37.5	25.3	27.3	19.6	20.8	39.4	26.1	29.9	
Ammonia (mg/l NH_3-N)	5.6	8.4	2.7	1.1	1.2	2.7	6.7	4.4	4.4	ND

*Overlying water = Moderately hard, carbon-filtered well water, renewed every 12 h.

Total No. Printouts/Bench Sheets Attached: 25

Client: ENTACT
Project ID: ENTA0701
Client Sample ID: Stanley Tools CMIP
Sample Period: 7/24/07-7/25/07

Coastal Bioanalysts, Inc.

Test Water Quality (Mean/Std. Dev.)*									
	Sediment ID								
Parameter (units)	6 Ctrl	1 006	2 9/1-002	3 001	4 3/3-004	5 13/1-008	7 005	8 007	9 003
Temp.	22	22	22	22	22	22	22	22	22
(°C)	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
D.O.	5.9	6.5	6.5	6.6	6.6	6.8	6.2	6.5	6.6
(mg/l)	1.3	0.8	0.7	0.7	0.7	0.6	0.8	0.7	1.0
pH	7.42	8.05	7.81	7.85	7.86	7.84	8.03	7.72	7.72
(S.U.)	0.14	0.23	0.11	0.35	0.11	0.11	0.14	0.11	0.14
Hardness	92	100	125	116	118	104	103	103	112
(mg/l)	11	8.5	13	11	23	17	30	16	31
Alkalinity	159	161	147	133	157	156	142	142	138
(mg/l)	15	11	32	23	21	16	3.5	16	12
NH3-N	0.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(mg/l)	1.2	0	0	0	0	0	0	0	0
Cond.	310	312	296	301	300	301	311	302	300
(µS/cm)	25	43	24	21	23	23	25	21	22

96-h Acute Test QA/QC Reference Toxicant: KCl Units: mg/l					
Species-Method (Ref. Test Date)	Data Source	Animal Source	% Control Survival	96-h LC50	95% C.L./A.L. for LC50
H. azteca EPA 100.1	RTT	Ches Cult	100	538	503-577
(8/1/07-8/5/07)	CC	CBI	100	523	367-679

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

9/12/07
Date

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

Client: ENTACT
Project ID: ENTA0701
Client Sample ID: Stanley Tools CMIP
Sample Period: 7/24/07-7/25/07

Coastal Bioanalysts, Inc.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

N/A: Not applicable.

N/D: Not determined or measured.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

Total No. Printouts/Bench Sheets Attached: 25

BASELINE INFO – H. AZTECA 28-D SEDIMENT TEST

Coastal Bioanalysts, Inc
Form STF0098B
Effective Date: 5/15/07

TEST ORGANISM INFO

Species: *Hyalella azteca*

Source: CBI Stock Cultures: X

Other: Ches. cult.

Organism Age: 7-8 - Days

Acclimation: **Water:** Well

Temp. (°C): 23

Arrival Date/Condition: 8/1/07

TEST DESIGN

Test Chamber: 300 ml high-form lipless beaker

Sediment Vol: 100 ml

Water Volume: ~175 ml

Renewal Vol: ~175 ml

Renewal Cycle: 1 Renewals/ 12 hr

Illumination: 16:8 L:D 10-20 uE/m^2/s

Number of Replicates/Concentration: 12

Number of Organisms/Replicate: 10

Feeding During Test: 1 ml YCT/chamber/day

Overlying water: ✓ Well ____ SFW

Overlying water: 7.98 pH (S.U.) 310 Conduct. (uS) 110 Hardness (mg/l) 124 Alkalinity (mg/l)

TEST SET UP

Set Up Date (Day –1): 7/31/07

Start Up Date (Day 0): 8/1/07

Set Up By (Initials): PD + GB

Time Animals Added: 1030

Initial Weights (mg; 8 subsets of 10 organisms):

Pan #	Total Wt.	Tare Wt.	Net Wt.	Avg. Wt.	Pan #	Total Wt.	Tare Wt.	Net Wt.	Avg. Wt.
1	7.69	6.84	0.85		5	6.19	5.41	0.78	
2	7.42	6.44	0.98		6	6.24	5.39	0.85	
3	6.17	5.18	0.99		7	5.93	4.93	1.00	
4	5.57	4.81	0.76		8	7.58	6.68	0.90	0.089

mean indiv.

Balance Calib. Check: Calib. True* Wt.: 10.00 mg Uncertainty: 0.05

Tare Wts. Meas. Calib.Wt.: 9.95 mg Initials: GB Tot. Wts. Meas. Calib.Wt.: 9.98 mg Initials: PD

*True value from annual calibration verification of class S weights against NIST-traceable standards

NOTES: Two vats (1200 L) filled w/ dilution water on day -2 for use during entire test.

Test I.D. ENTA 0701 -CHA

FORM STF0023B SEDIMENT TEST TREATMENT ASSIGNMENT
5/15/07

TEST ID: ENIA074

Sample ID	Test Treatment I.D.	Sample ID	Test Treatment I.D.
SD-J2.001	3		
SE/RC-9/1.002	2		
SD.E2.003	9		
SE/RE-3/3.004	4		
SD.C1.005	7		
SD.A1.006	1		
SD-007	8		
SE/RC-13/1.008	5		
LAB CONTROL	6		

Assigned by: CP
Date: 7/3/07

BIOMASS AND SURVIVAL – DAY 28 H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc
Form STF00910B
Effective Date: 5/15/07

DAY 28 GROWTH/SURVIVAL:

Treatment I.D.	Replicate Number	# Live	Pan #	Tot. Dry Wt. (mg)	Tare Wt. (mg)	Net Dry Wt. (mg)
1	1	9	1	9.40	6.14	✓
	2	8	2	9.27	5.75	
	3	9	3	9.36	5.23	
	4	10	4	9.56	5.56	
	5	10	5	9.99	6.13	
	6	8	6	10.20	6.39	
	7	10	7	9.38	5.73	
	8	9	8	8.83	5.69	
2	1	10	9	9.77	6.32	
	2	10	10	9.28	5.64	
	3	10	11	9.82	5.95	
	4	9	12	10.39	6.99	
	5	8	13	10.61	5.88	See Stat Printout
	6	9	14	10.23	5.90	
	7	9	15	9.29	5.34	
	8	8	16	10.81	6.70	
3	1	8	17	9.78	6.57	
	2	9	18	9.98	6.25	
	3	10	19	10.42	6.52	
	4	10	20	10.22	7.04	
	5	9	21	8.85	5.95	
	6	10	22	10.70	7.14	
	7	10	23	11.56	8.08	
	8	10	24	11.10	7.41	

Balance Calib. Check: **Calib. True* Wt.:** 10.00 **mg Uncertainty:** 0.05

Tare Weights: Measured Calib.Wt.: 10.00 **mg Initials:** PB

Total Weights: Measured Calib.Wt.: 9.97 **mg Initials:** WB

TEST END + COUNTS BY PB + PD 0800-1400 8/29/07

*True value from annual calibration verification of class S weights against NIST-traceable standards

Test I.D. ENTA0701-CHA

BIOMASS AND SURVIVAL – DAY 28 H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc
Form STF00910B
Effective Date: 5/15/07

DAY 28 GROWTH/SURVIVAL:

Treatment I.D.	Replicate Number	# Live	Pan #	Tot. Dry Wt. (mg)	Tare Wt. (mg)	Net Dry Wt. (mg)
4	1	10	25	11.27	7.58	
	2	9	26	11.24	8.12	
	3	10	27	11.45	8.02	
	4	10	28	10.77	6.97	
	5	10	29	10.38	6.74	
	6	10	30	10.51	6.64	
	7	8	31	10.96	7.66	
	8	10	32	11.69	7.99	
5	1	7	33	10.08	8.02	
	2	10	34	10.46	7.45	
	3	10	35	11.51	8.37	
	4	10	36	10.54	7.45	
	5	10	37	11.96	8.09	See Spreadsheet
	6	10	38	10.67	7.45	
	7	9	39	10.02	6.75	
	8	10	40	11.36	6.84	
6	1	9	41	11.57	6.90	
	2	9	42	10.24	5.95	
	3	9	43	11.88	6.95	
	4	9	44	12.16	7.38	
	5	10	45	12.23	7.32	
	6	10	46	12.44	6.83	
	7	9	47	12.26	6.95	
	8	10	48	13.09	7.51	

Balance Calib. Check: **Calib. True[*] Wt.:** 10.00 **mg** **Uncertainty:** 0.05

Tare Weights: Measured Calib.Wt.: 10.00 **mg** **Initials:** PB

Total Weights: Measured Calib.Wt.: 9.97 **mg** **Initials:** LG

TEST END/LOWS BY PB/PD @ 0800-1400 8/29/07

[*]True value from annual calibration verification of class S weights against NIST-traceable standards

Test I.D. ENTA 0701 -CHA

DAY 28 GROWTH/SURVIVAL:

Treatment I.D.	Replicate Number	# Live	Pan #	Tot. Dry Wt. (mg)	Tare Wt. (mg)	Net Dry Wt. (mg)
7	1	9	49	9.60	6.84	
	2	10	50	9.15	6.76	
	3	10	51	8.17	6.16	
	4	9	52	10.11	7.25	
	5	7	53	10.33	8.10	
	6	7	54	10.38	8.38	
	7	4	55	8.75	7.36	
	8	7	56	9.07	6.76	
8	1	10	57	9.83	5.80	
	2	10	58	10.99	7.57	
	3	9	59	10.79	6.38	
	4	9	60	10.29	6.56	
	5	8	61	9.75	6.20	
	6	9	62	10.06	6.07	
	7	10	63	10.25	6.78	
	8	10	64	11.58	7.02	
9	1	0	65	—	7.74	—
	2	0	66	—	7.45	—
	3	0	67	—	7.07	—
	4	0	68	—	7.66	—
	5	0	69	—	7.94	—
	6	0	70	—	7.55	—
	7	0	71	—	6.36	—
	8	0	72	—	8.88	—

Balance Calib. Check: **Calib. True* Wt.:** 10.00 **mg** **Uncertainty:** 0.05

Tare Weights: Measured Calib.Wt.: 10.00 **mg** **Initials:** GB

Total Weights: Measured Calib.Wt.: 9.97 **mg** **Initials:** GO

TEST END + COUNTS BY PD + GB 0800-1900 8/29/07

*True value from annual calibration verification of class S weights against NIST-traceable standards

Test I.D. ENGA0721 -CHA

Amphipod 28-Day Test/Survival

Start Date:	8/1/2007 1030	Test ID:	ENTA0701	Sample ID:	
End Date:	8/29/2007 1400	Lab ID:	CBI	Sample Type:	
Sample Date:		Protocol:	EPA Freshwater Sediment	Test Species:	H. azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
CONTROL-6	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	1.0000
1	0.9000	0.8000	0.9000	1.0000	1.0000	0.8000	1.0000	0.9000
2	1.0000	1.0000	1.0000	0.9000	0.8000	0.9000	0.9000	0.8000
3	0.8000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	1.0000
4	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000	0.8000	1.0000
5	0.7000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000	1.0000
7	0.9000	1.0000	1.0000	0.9000	0.7000	0.7000	0.4000	0.7000
8	1.0000	1.0000	0.9000	0.9000	0.8000	0.9000	1.0000	1.0000
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
CONTROL-6	0.9375	1.0000	1.3102	1.2490	1.4120	6.438	8		
1	0.9125	0.9733	1.2747	1.1071	1.4120	10.042	8	63.00	45.00
2	0.9125	0.9733	1.2747	1.1071	1.4120	10.042	8	63.00	45.00
3	0.9500	1.0133	1.3332	1.1071	1.4120	8.799	8	73.50	45.00
4	0.9625	1.0267	1.3535	1.1071	1.4120	8.476	8	77.50	45.00
5	0.9500	1.0133	1.3390	0.9912	1.4120	11.328	8	77.50	45.00
7	0.7875	0.8400	1.1225	0.6847	1.4120	22.412	8	54.00	45.00
8	0.9375	1.0000	1.3128	1.1071	1.4120	8.821	8	69.50	45.00
9	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.60002	1.035	-0.721	1.02145
Bartlett's Test indicates equal variances (p = 0.14)	10.9749	18.4753		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	8	9	8.48528	12.5

 ToxCalc v5.0.23 Reviewed by: [illegible]

Amphipod 28-Day Test/Growth

Start Date:	8/1/2007 1030	Test ID:	ENTA0701	Sample ID:	
End Date:	8/29/2007 1400	Lab ID:	CBI	Sample Type:	
Sample Date:		Protocol:	EPA Freshwater Sediment	Test Species:	H. azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
CONTROL-6	0.5189	0.4767	0.5478	0.5311	0.4910	0.5610	0.5900	0.5580
1	0.3622	0.4400	0.4589	0.4000	0.3860	0.4763	0.3650	0.3489
2	0.3450	0.3640	0.3870	0.3778	0.5913	0.4811	0.4389	0.5138
3	0.4013	0.4144	0.3900	0.3180	0.3222	0.3560	0.3480	0.3690
4	0.3690	0.3467	0.3430	0.3800	0.3640	0.3870	0.4125	0.3700
5	0.2943	0.3010	0.3140	0.3090	0.3870	0.3220	0.3633	0.4520
7	0.3067	0.2390	0.2010	0.3178	0.3186	0.2857	0.3475	0.3300
8	0.4030	0.3420	0.4900	0.4144	0.4438	0.4433	0.3470	0.4560

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
CONTROL-6	0.5343	1.0000	0.5343	0.4767	0.5900	7.075	8			
*1	0.4047	0.7573	0.4047	0.3489	0.4763	11.877	8	5.062	2.394	0.0613
*2	0.4373	0.8185	0.4373	0.3450	0.5913	19.599	8	3.786	2.394	0.0613
*3	0.3649	0.6829	0.3649	0.3180	0.4144	9.722	8	6.616	2.394	0.0613
*4	0.3715	0.6953	0.3715	0.3430	0.4125	6.008	8	6.356	2.394	0.0613
*5	0.3428	0.6416	0.3428	0.2943	0.4520	15.902	8	7.477	2.394	0.0613
*7	0.2933	0.5489	0.2933	0.2010	0.3475	16.915	8	9.411	2.394	0.0613
*8	0.4174	0.7813	0.4174	0.3420	0.4900	12.476	8	4.563	2.394	0.0613

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.48462	1.035	0.43605	0.55686
Bartlett's Test indicates equal variances (p = 0.06)	13.3348	18.4753		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	<1	1			0.06132	0.11476	0.04151	0.00262	2.9E-11	7, 56

 ToxCalc v5.0.23 Reviewed by: ___

Amphipod 28-Day Test/Survival

Start Date:	8/1/2007 10:30	Test ID:	ENTA0701	Sample ID:	
End Date:	8/29/2007 14:00	Lab ID:	CBI	Sample Type:	
Sample Date:		Protocol:	EPA Freshwater Sediment	Test Species:	H. azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
SD007-8	1.0000	1.0000	0.9000	0.9000	0.8000	0.9000	1.0000	1.0000
1	0.9000	0.8000	0.9000	1.0000	1.0000	0.8000	1.0000	0.9000
2	1.0000	1.0000	1.0000	0.9000	0.8000	0.9000	0.9000	0.8000
3	0.8000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	1.0000
4	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000	0.8000	1.0000
5	0.7000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000	1.0000
7	0.9000	1.0000	1.0000	0.9000	0.7000	0.7000	0.4000	0.7000
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
SD007-8	0.9375	1.0000	1.3128	1.1071	1.4120	8.821	8		
1	0.9125	0.9733	1.2747	1.1071	1.4120	10.042	8	62.50	46.00
2	0.9125	0.9733	1.2747	1.1071	1.4120	10.042	8	62.50	46.00
3	0.9500	1.0133	1.3332	1.1071	1.4120	8.799	8	71.50	46.00
4	0.9625	1.0267	1.3535	1.1071	1.4120	8.476	8	75.00	46.00
5	0.9500	1.0133	1.3390	0.9912	1.4120	11.328	8	74.50	46.00
7	0.7875	0.8400	1.1225	0.6847	1.4120	22.412	8	53.00	46.00
9	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.61507	1.035	-0.7359	0.83771
Bartlett's Test indicates equal variances (p = 0.24)	8.01507	16.8119		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	7	9	7.93725	14.2857

ToxCalc v5.0.23

Reviewed by: PN

Amphipod 28-Day Test/Growth

Start Date:	8/1/2007 10:30	Test ID:	ENTA0701	Sample ID:	
End Date:	8/29/2007 14:00	Lab ID:	CBI	Sample Type:	
Sample Date:		Protocol:	#NAME?	Test Species:	H. azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
SD007-8	0.4030	0.3420	0.4900	0.4144	0.4438	0.4433	0.3470	0.4560
1	0.3622	0.4400	0.4589	0.4000	0.3860	0.4763	0.3650	0.3489
2	0.3450	0.3640	0.3870	0.3778	0.5913	0.4811	0.4389	0.5138
3	0.4013	0.4144	0.3900	0.3180	0.3222	0.3560	0.3480	0.3690
4	0.3690	0.3467	0.3430	0.3800	0.3640	0.3870	0.4125	0.3700
5	0.2943	0.3010	0.3140	0.3090	0.3870	0.3220	0.3633	0.4520
7	0.3067	0.2390	0.2010	0.3178	0.3186	0.2857	0.3475	0.3300

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
SD007-8	0.4174	1.0000	0.4174	0.3420	0.4900	12.476	8			
1	0.4047	0.9694	0.4047	0.3489	0.4763	11.877	8	0.484	2.359	0.0623
2	0.4373	1.0477	0.4373	0.3450	0.5913	19.599	8	-0.753	2.359	0.0623
3	0.3649	0.8741	0.3649	0.3180	0.4144	9.722	8	1.989	2.359	0.0623
4	0.3715	0.8900	0.3715	0.3430	0.4125	6.008	8	1.737	2.359	0.0623
*5	0.3428	0.8213	0.3428	0.2943	0.4520	15.902	8	2.823	2.359	0.0623
*7	0.2933	0.7026	0.2933	0.2010	0.3475	16.915	8	4.698	2.359	0.0623

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.41347	1.035	0.46543	0.52366
Bartlett's Test indicates equal variances (p = 0.06)	12.2192	16.8119		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	4	5	4.47214	25	0.06235	0.14936	0.01919	0.00279	2.5E-05	6, 49

Amphipod 28-Day Test/Growth

Start Date:	8/1/2007 10:30	Test ID:	ENTA0701	Sample ID:	
End Date:	8/29/2007 14:00	Lab ID:	CBI	Sample Type:	
Sample Date:		Protocol:	EPA Freshwater Sediment	Test Species:	H. azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
ERC131008-5	0.2943	0.3010	0.3140	0.3090	0.3870	0.3220	0.3633	0.4520
1	0.3622	0.4400	0.4589	0.4000	0.3860	0.4763	0.3650	0.3489
2	0.3450	0.3640	0.3870	0.3778	0.5913	0.4811	0.4389	0.5138
3	0.4013	0.4144	0.3900	0.3180	0.3222	0.3560	0.3480	0.3690
4	0.3690	0.3467	0.3430	0.3800	0.3640	0.3870	0.4125	0.3700
7	0.3067	0.2390	0.2010	0.3178	0.3186	0.2857	0.3475	0.3300
8	0.4030	0.3420	0.4900	0.4144	0.4438	0.4433	0.3470	0.4560

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
ERC131008-5	0.3428	1.0000	0.3428	0.2943	0.4520	15.902	8			
1	0.4047	1.1803	0.4047	0.3489	0.4763	11.877	8	-2.339	2.359	0.0623
2	0.4373	1.2757	0.4373	0.3450	0.5913	19.599	8	-3.576	2.359	0.0623
3	0.3649	1.0643	0.3649	0.3180	0.4144	9.722	8	-0.834	2.359	0.0623
4	0.3715	1.0837	0.3715	0.3430	0.4125	6.008	8	-1.086	2.359	0.0623
7	0.2933	0.8555	0.2933	0.2010	0.3475	16.915	8	1.875	2.359	0.0623
8	0.4174	1.2176	0.4174	0.3420	0.4900	12.476	8	-2.823	2.359	0.0623

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates normal distribution (p > 0.01)	0.41347	1.035	0.46543	0.52366
Bartlett's Test indicates equal variances (p = 0.06)	12.2192	16.8119		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU	MSDu	MSDp	MSB	MSE	F-Prob	df
Dunnett's Test	8	>8		12.5	0.06235	0.18186	0.01919	0.00279	2.5E-05	6, 49

 ToxCalc v5.0.23 Reviewed by: PD

Amphipod 28-Day Test/Survival

Start Date:	8/1/2007 10:30	Test ID:	ENTA0701	Sample ID:	
End Date:	8/29/2007 14:00	Lab ID:	CBI	Sample Type:	
Sample Date:		Protocol:	EPA Freshwater Sediment	Test Species:	H. azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
ERC131008-5	0.7000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000	1.0000
1	0.9000	0.8000	0.9000	1.0000	1.0000	0.8000	1.0000	0.9000
2	1.0000	1.0000	1.0000	0.9000	0.8000	0.9000	0.9000	0.8000
3	0.8000	0.9000	1.0000	1.0000	0.9000	1.0000	1.0000	1.0000
4	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000	0.8000	1.0000
7	0.9000	1.0000	1.0000	0.9000	0.7000	0.7000	0.4000	0.7000
8	1.0000	1.0000	0.9000	0.9000	0.8000	0.9000	1.0000	1.0000
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
ERC131008-5	0.9500	1.0000	1.3390	0.9912	1.4120	11.328	8		
1	0.9125	0.9605	1.2747	1.1071	1.4120	10.042	8	57.50	46.00
2	0.9125	0.9605	1.2747	1.1071	1.4120	10.042	8	57.50	46.00
3	0.9500	1.0000	1.3332	1.1071	1.4120	8.799	8	65.00	46.00
4	0.9625	1.0132	1.3535	1.1071	1.4120	8.476	8	68.50	46.00
7	0.7875	0.8289	1.1225	0.6847	1.4120	22.412	8	50.50	46.00
8	0.9375	0.9868	1.3128	1.1071	1.4120	8.821	8	61.50	46.00
9	0.0000	0.0000	0.1588	0.1588	0.1588	0.000	8		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Kolmogorov D Test indicates non-normal distribution (p <= 0.01)	1.61507	1.035	-0.7359	0.83771
Bartlett's Test indicates equal variances (p = 0.24)	8.01507	16.8119		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	8	9	8.48528	12.5

ToxCalc v5.0.23

Reviewed by: PO

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 1

Treatment I.D.	Cond. (uS) Day 0	Temperature (°C) Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
1	350	22	22	22	22	22	22	22
2	331	22	22	22	22	22	22	22
3	334	22	22	22	22	22	22	22
4	335	22	22	22	22	22	23	22
5	341	22	22	22	22	22	23	22
6	317	22	22	22	22	22	23	22
7	335	22	22	22	22	22	23	22
8	338	22	22	22	22	22	22	23
Replicate # Measured:		3	6	8	1	2	4	5
Date:		8/1/07	8/2/07	8/3/07	8/4/07	8/5/07	8/6/07	8/7/07
Initials:		LM	PB	LM	LM	CS	LM	LM

		Diss. Oxygen (mg/l)			pH (S.U.)		
	Day of Week (MWF):	W	F	M	W	F	M
	Test Day:	0	2	5	0	2	5
T	1	8.4	7.5	6.4	7.97	7.85	7.93
R	2	8.2	7.5	6.3	7.95	7.88	7.80
E	3	8.2	7.6	6.4	8.03	7.88	7.89
A	4	8.2	8.0	6.3	8.04	7.93	7.93
T	5	8.3	7.4	6.7	8.05	7.85	8.05
M	6	8.3	7.5	7.0	7.41	7.30	7.38
N	7	8.1	7.2	6.5	7.95	7.88	7.93
T	8	8.3	7.5	6.4	7.93	7.69	7.89

TEST I.D. EMA0701 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 1

Treatment I.D.	Cond. (uS)	Temperature (° C)						
	Day 0	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
9	337	22	22	22	22	22	22	23

Replicate # Measured:	3	6	8	1	2	4	5
Date:	8/1/07	8/2/07	8/3/07	8/4/07	8/5/07	8/6/07	8/7/07
Initials:	LM	RB	LM	LM	CS	LM	LM

	Diss. Oxygen (mg/l)			pH (S.U.)		
Day of Week (MWF):	W	F	M	W	F	M
Test Day:	0	2	5	0	2	5
TREATMENT 9	8.3	8.3	6.8	7.87	7.72	7.86

TEST I.D. EMTA0201 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 2

Treatment I.D.	Cond. (uS) Day 7	Temperature (° C) Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13
1	275	22	22	22	22	22	22	23
2	274	22	22	22	22	22	22	23
3	279	22	22	22	22	22	22	23
4	280	22	22	22	22	22	22	23
5	293	22	22	22	22	22	22	23
6	269	22	22	22	22	22	22	23
7	278	22	22	22	22	22	22	23
8	290	22	22	22	22	22	22	23

	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13
Replicate # Measured:	7	2	4	3	6	1	5
Date:	8/8/07	8/9/07	8/10/07	8/11/07	8/12/07	8/13/07	8/14/07
Initials:	LM	PB/LM	PB/LM	CS	CS	CB	LM

	Diss. Oxygen (mg/l)			pH (S.U.)		
Day of Week (MWF):	W	F	M	W	F	M
Test Day:	7	9	12	7	9	12
TREATMENT 1	6.7	6.6	6.3	7.73	7.79	7.86
2	6.7	6.4	6.5	7.68	7.78	7.80
3	6.7	6.0	6.5	7.70	7.66	7.89
4	6.8	6.3	6.6	7.75	7.80	7.82
5	6.8	6.6	6.8	7.74	7.81	7.79
6	5.5	6.4	6.4	7.25	7.16	7.46
7	6.5	5.9	6.3	7.85	7.87	8.06
8	6.5	6.0	6.6	7.64	7.71	7.69

TEST I.D. ENTA0701 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 2

Treatment I.D.	Cond. (uS) Day 7	Temperature (° C) Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13
9	284	22	22	22	22	23	22	23

Replicate # Measured:	7	2	4	3	6	1	5
Date:	8/8/07	8/9/07	8/10/07	8/11/07	8/12/07	8/13/07	8/14/07
Initials:	GM	PD/PB	PD/GD	CS	CS	LB	LB

		Diss. Oxygen (mg/l)			pH (S.U.)		
	Day of Week (MWF):	W	F	M	W	F	M
	Test Day:	7	9	12	7	9	12
TREATMNT	9	7.0	8.0	6.5	7.53	7.46	7.49

TEST I.D. ENTA0701 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 3

Treatment I.D.	Cond. (uS) Day 14	Temperature (° C) Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20
1	245	22	22	22	22	22	22	22
2	276	22	22	22	22	22	22	22
3	286	22	22	22	22	22	22	22
4	279	22	22	22	22	22	22	22
5	286	22	22	22	22	22	22	22
6	286	22	22	22	22	22	22	22
7	247	22	22	22	22	22	22	22
8	285	22	22	22	22	22	22	22

	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20
Replicate # Measured:	3	1	8	6	4	6	1
Date:	8/15/07	8/16/07	8/17/07	8/18/07	8/19/07	8/20/07	8/21/07
Initials:	LG	PB	LG	CS	CS	LP	LG

	Diss. Oxygen (mg/l)			pH (S.U.)		
Day of Week (MWF):	W	F	M	W	F	M
Test Day:	14	16	19	14	16	19
TREATMNT 1	6.1	5.9	5.3	8.35	8.29	8.12
2	6.3	6.0	6.1	7.87	7.95	7.91
3	6.4	6.0	6.0	8.15	8.30	7.31
4	6.6	6.1	6.1	7.89	7.91	7.81
5	6.5	6.3	6.5	7.81	7.86	7.90
6	5.1	5.8	4.8	7.38	7.45	7.63
7	6.3	6.2	5.8	8.22	8.27	8.18
8	6.2	6.0	6.4	7.71	7.74	7.68

TEST I.D. ENTA0701 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 3

Treatment I.D.	Cond. (uS) Day 14	Temperature (° C) Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20
9	283	22	22	22	22	22	22	22

Replicate # Measured:	3	1	8	6	4	6	1
Date:	8/15/07	8/16/07	8/17/07	8/18/07	8/19/07	8/20/07	8/21/07
Initials:	GM	BB	GM	CS	CS	GM	GM

	Diss. Oxygen (mg/l)			pH (S.U.)		
Day of Week (MWF):	W	F	M	W	F	M
Test Day:	14	16	19	14	16	19
TREATMNT 9	5.6	5.7	6.5	7.75	7.79	7.67

TEST I.D. EMA0701 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 4

Treatment I.D.	Cond (uS) Day21	Cond (uS) Day 28	Temperature (°C) Day21	Day22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28
1	309	360	22	22	22	22	22	22	22	22
2	291	306	22	22	22	22	22	22	22	22
3	304	302	22	22	22	22	22	22	22	22
4	308	296	22	22	22	22	22	22	22	22
5	293	292	22	22	22	22	22	22	22	22
6	296	284	22	22	22	22	22	22	22	22
7	335	305	22	22	22	22	22	22	22	22
8	301	294	22	22	22	22	22	22	22	22
Replicate # Measured:			4	1	3	2	1	5	7	6
Date:			8/22/07	8/23/07	8/24/07	8/25/07	8/26/2007	8/27/07	8/28/07	8/29/07
Initials:			WA	PD	WA	CS	CS	WA	WA	WB

	Diss. Oxygen (mg/l)				pH (S.U.)			
Day of Week (MWF):	W	F	M	W	W	F	M	W
Test Day:	21	23	26	28	21	23	26	28
T R E A T M N T 1	5.4	5.6	6.3	6.4	8.21	8.36	8.22	7.88
2	5.7	5.9	6.2	6.5	7.83	7.74	7.77	7.57
3	5.8	5.9	6.5	7.4	8.15	8.19	7.11	7.82
4	5.9	5.9	6.5	6.9	7.77	7.83	8.02	7.68
5	6.1	6.3	6.6	6.9	7.76	7.84	7.87	7.65
6	4.2	4.1	4.7	6.8	7.48	7.42	7.57	7.38
7	6.7	5.2	5.2	6.2	8.05	8.44	8.14	7.95
8	5.9	6.0	6.0	6.4	7.42	7.67	7.82	7.57

TEST I.D. ENTA0701 CHA

DAILY WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc.
Form STF0099B
Effective Date 5/15/07

TEST WEEK 4

Treatment I.D.	Cond (uS) Day21	Cond (uS) Day 28	Temperature (° C) Day21	Day22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28
9	298	300	22	22	22	22	22	22	22	22

Replicate # Measured:	4	1	3	2	1	5	7	6
Date:	8/22/07	8/23/07	8/24/07	8/25/07	8/26/07	8/27/07	8/28/07	8/29/07
Initials:	GM	PB	GM	CS	CS	GM	GM	CB

	Diss. Oxygen (mg/l)				pH (S.U.)			
Day of Week (MWF):	W	F	M	W	W	F	M	W
Test Day:	21	23	26	28	21	23	26	28
TREATMENT 9	5.7	5.2	5.8	6.5	7.52	7.54	7.97	7.79

TEST I.D. ENTA0701 CHA

TOTAL WATER QUALITY – H. AZTECA 28-D TEST

Coastal Bioanalysts, Inc
Form STF00911C
Effective Date: 5/15/07

Treatment Identification	Day 0 Hardness (mg/l)	Day 0 Alkalinity (mg/l)	Day 0 NH3-N (mg/l)	Day 28 Hardness (mg/l)	Day 28 Alkalinity (mg/l)	Day 28 NH3-N (mg/l)	NOTES
1	106	168	<1.0	94	153	<1.0	
2	134	169	<1.0	116	124	<1.0	
3	124	149	<1.0	108	112	<1.0	
4	134	121	<1.0	102	142	<1.0	
5	116	147	<1.0	92	144	<1.0	
6	100	169	1.8	84	148	<1.0	
7	124	139	<1.0	82	144	<1.0	
8	114	153	<1.0	92	130	<1.0	
9	134	146	<1.0	90	129	<1.0	
Repl. # Meas.:	1	1	–	5	5	–	
Date:	– 8/1/07 –		–	– 8/29/07		–	
Initials:	PD + GB		–	PD + GB		–	

Test I.D. ENTA 0701 -CHA

FORM STF0021B SEDIMENT CHARACTERISTICS
5/15/07

TEST ID EMA0701

Sediment ID	Sediment Appearance and Texture	Sieve Size (µm)	Check for Interfering Organisms Organism Types Present	Pore Water pH (S.U.)	NH$_3$-N (mg/l)	Salinity (g/kg)
1	Black, sandy, gravel chunks			6.91	8.4	N/A
2	Black, sandy, sticks			6.81	2.7	
3	Black, sandy, mud			7.02	1.1	
4	Gray, sandy, mud			6.78	1.2	
5	Gray, sandy, mud			6.85	2.7	
6	sand, mud			6.25	5.6	
7	Black, oily smell, sand/mud		~~Black, oily smell~~	6.86	6.7	
8	Black, sandy, mud			6.88	4.4	
9	Black, oily, sand sticks			6.85	4.4	
Initials:						
Date:						

Note: See separate work sheets for other sediment parameters (e.g. percent water)

FORM STF0024B SEDIMENT PERCENT WATER
5/15/07

TEST ID ENTP0701

Sample ID	Total Wet Wt. (g)	Total Dry Wt. (g)	Tare Wt (g)	Net Wet Wt (g)	Net Dry Wt (g)	% H_2O
1	44.8	28.5	1.3	43.5	27.2	37.5
2	58.5	44.0	1.3	57.2	42.7	25.3
3	53.4	39.2	1.3	52.1	37.9	27.3
4	57.5	46.5	1.3	56.2	45.2	19.6
5	71.4	56.8	1.2	70.2	55.6	20.8
6	36.8	15.3	1.3	35.5	14.0	60.6
7	43.5	26.9	1.3	42.2	25.6	39.4
8	62.5	46.5	1.3	61.2	45.2	26.1
9	66.9	47.3	1.3	65.6	46.0	29.9

Tare Wt:	Date: 8/1/07	Class S Nom. Wt 10.0	Class S Meas. Weight 10.0	Init GB
Wet Wt:	Date: 8/1/07	Class S Nom. Wt 50.0	Class S Meas. Weight 50.0	Init PB/GB
Dry Wt:	Date: 8/8/07	Class S Nom. Wt 50.0	Class S Meas. Weight 50.0	Init PB

Note: See separate work sheets for other sediment parameters (e.g. pore water pH)

ENTA0701

SEDIMENT CHAIN OF CUSTODY

Questions? Please call us at 804-694-8285

Ship To:
Coastal Bioanalysts, Inc.
6400 Enterprise Ct.
Gloucester VA 23061

PROJECT NAME: Stanley Tools CMIP	CONTACT NAME: Jeff Stofferahn
SAMPLERS: R. Regester / M. Carlson	CONTACT PH#: 847.409.7687
	CONTACT EMAIL: jstofferahn@entact.com
ANALYSES REQUESTED: Hyallela azteca - 28 day	
BILL TO: ENTACT 1010 Executive Ct Ste 280 Westmont IL 60559	PO #: AUTHORIZED BY: (PRINT & SIGN)[1] Rhonda Regester Rhonda Regester

SAMPLE ID	DATE	TIME	SAMPLE LOCATION/DESCRIPTION	NO. BTLS	CONT. TYPE[2]
SD.J2.001	7.24.07	1006	1 SD.J2	1	HDPE
SE/RC.9/1.002	7.24.07	1015	2 SE/RC-9/1	1	HDPE
SD.E2.003	7.24.07	1052	3 SD.E2	1	HDPE
SE/RE-3/3.004	7.24.07	1134	4 SE/RE-3/3	1	HDPE
SD.C1.005	7.24.07	1305	5 SD.C1	1	HDPE
SD.A1.006	7.24.07	1326	6 SD.A1	1	HDPE
SD-007	7/25/07	0940	7 SD-007	1	HDPE
SE/RC-13/1-008	"	1020	8 SE/RC-13/1	1	HDPE
			9		
			10		

[1] Authorization for payment by a valid purchase order or established account required for processing of samples
[2] Container type: G = glass HDPE = high density polyethylene O = Other:__________

Print and Sign Names:

1. Relinquished by: Rhonda Regester Date/time: 7.25.07 1055
   Received by: cooler Date/time: 7.25.07 1055
2. Relinquished by: Cooler / Fed Ex Date/time:______
   Received by: [signature] Date/time: 7/26/07 1015
3. Relinquished by:______ Date/time:______
   Received by:______ Date/time:______

Arrival condition: Acceptable ✓ Other______

Cooler temperature upon arrival: 2 °C Delivered by: UPS___ FedEx ✓ Hand___
Other______

Form STF0011B
5/15/07

SEDIMENT CHAIN OF CUSTODY

Questions? Please call us at 804-694-8285

Ship To:
Coastal Bioanalysts, Inc.
6400 Enterprise Ct.
Gloucester VA 23061

PROJECT NAME: ENTA 0701	CONTACT NAME:
SAMPLERS: PFD	CONTACT PH#: N/A
	CONTACT EMAIL:
ANALYSES REQUESTED: N/A	
BILL TO: N/A	PO #: AUTHORIZED BY: (PRINT & SIGN)[1]

SAMPLE ID	DATE	TIME	SAMPLE LOCATION/DESCRIPTION	NO. BTLS	CONT. TYPE[2]
LAB CONTROL	7/25/07	1530	1 BEAVERDAM RETENTION POND #1	1	PP
			2		
			3		
			4		
			5		
			6		
			7		
			8		
			9		
			10		

[1] Authorization for payment by a valid purchase order or established account required for processing of samples
[2] Container type: G = glass HDPE = high density polyethylene O = Other:________

Print and Sign Names:

1. Relinquished by: [signature] Date/time: 7/25/07 1600
   Received by: SAMPLE COLD STORAGE Date/time: "
2. Relinquished by:________ Date/time:________
   Received by:________ Date/time:________
3. Relinquished by:________ Date/time:________
   Received by:________ Date/time:________

Arrival condition: Acceptable ✓ Other________

Cooler temperature upon arrival: N/A °C Delivered by: UPS___ FedEx___ Hand ✓
Other ON ICE

Form STF0011B
5/15/07

CHESAPEAKE CULTURES, INC.
P.O. BOX 507
HAYES, VA 23072
(804) 693-4046 Phone
(804) 694-4704 Fax
growfish@c-cultures.com

Packing Slip

8/1/2007 5820

Pete DeLisle
Coastal Bioanalysts
6400 Enterprise Ct.
Gloucester, VA 23061

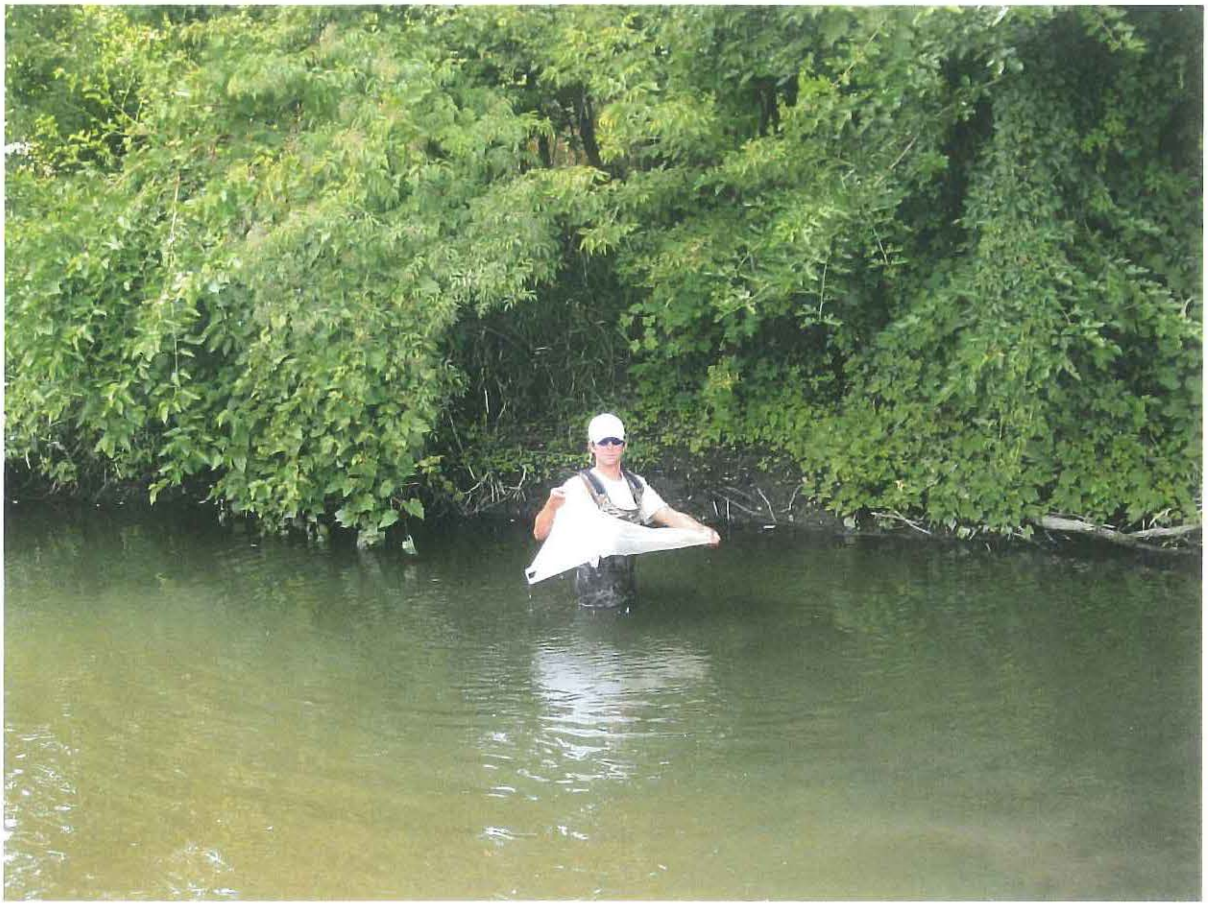
verbal	net 30 days		8/1/2007			

[illegible]	[redacted]
Sales Tax	

APPENDIX D

BENTHIC COMMUNITY STUDY

Red Cedar River, Stanley Tool Works Benthic Macroinvertebrate Community Survey



Prepared By:

Integrated Lakes Management

120 Le Barron St

Waukegan, IL 60085

Prepared For:

Entact

1010 Executive Ct, Suite 280

Westmont, IL 60559

September 4, 2007

On July 24-25, 2007 ILM and Entact personnel collected samples along a designated stretch of the Red Cedar River where the former Stanley Tool Works was located in Fowlerville, Michigan. Eight sites, chosen by others from former sampling activities, were sampled. Six sites were located within the immediate vicinity of the two effluent discharge points from the operation's former productions; and two reference sites were sampled as controls to reference the results of the target sample locations. The reference locations were located far enough up stream as to provide a representation of what the benthic community should be composed of under natural succession of the river in the absence of point source influence such as that introduced by Stanley Tools.

At each of the eight sites sampled, similar substrates were monitored in an attempt to collect comparable data between points. Different riparian conditions lend themselves favorable to different species and organisms; by keeping the sampled substrate consistent at each location we can obtain an accurate representation of the rivers health by the type of organisms that inhabit each test site in comparison to the reference sites.

Sampling began at the site's furthest point down stream and continued up stream as to not disturb the communities inhabiting the remaining sample sites. At each sample site visual data was collected before physical sampling began. The location of runs, riffles, pools, and glides in proximity to the sample locations were documented as well as the presence of any structures that may alter the flow or hydrology of that particular site such as ditches, large rocks, or dead falls. Watershed influences and weather conditions, previous and current, were also collected. Once visual assessment of a sample location was completed, the physical sampling commenced. A transect was identified at a location within close proximity to the chemical sampling location that would allow us to keep sampled substrate consistent throughout the benthic community survey. Three locations were sampled along each transect. A 12" x 12" Surder stream bottom sampler with 500 um meshes was used for the benthic macroinvertebrate collection. All substrate within the sample grid was thoroughly disturbed to ensure all organisms in that location were gathered for identification and numeration. Once collected, each of the three samples within a single transect were rough sorted in the field and compiled to create a composite for that site. A coarse sieve was used to separate the fine particulate organic matter from the coarse particulate organic mater, while a No. 35 500 um U.S.A. standard test sieve was used to separate the fine particulate organic mater from material such as silt and muck. All organism encountered during the rough sort were place in labeled jars filled with desiccating alcohol for preservation. The coarse particulate organic matter was thoroughly sorted through in the field and then discarded; the fine particular organic mater was collected and preserved in separate jars for a more detailed sort in the laboratory. Once physical benthic community sampling was completed at each site; stream width, stream depth at each collection location, as well as the substrate composition was recorded.

Sorting was done at our facility using a magnifying lamp, for each composite sample the entire collection was thoroughly sorted through one spoonful at a time. Since the samples were preserved for one week in desiccating alcohol, by stirring small quantities of the collection in tap water the preserved specimens would float to the top in the sorting pan making sorting and collection easier. All material was extensively sorted through to ensure an accurate community survey. After the fine sort was completed, identification and numeration began. Using a dissecting scope (magnification of 30 X) all organisms were identified by family, and whenever possible genus and species. All associating data gathered was compiled into tables displaying the species abundance and macroinvertebrate biotic index of each of the eight sample sites. The compiled tables were than given to Entact for further analysis by their Risk Assessor, with copies of these tables attached to this report.

All sorting and identification was performed by Christopher J. Ryan (B.S. in Zoology from Southern Illinois University, and seven years experience in the field of water quality monitoring), and George Russell (student at Columbia College of Missouri majoring in pre-Law and a member of the Missouri Stream Team for the past year) working under the direction of Christopher J. Ryan.

If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

Christopher J. Ryan

Table 1: Benthic Tissue Sample Composition

Location	Family Name	Common Name	Trophic Status
SD-J2-001	Tubificidae	Tubifex	Collector-Gatherer
	Cambaridae	Freshwater Crawfishes	Predator
	Chironomidae	Non-Biting Midges	Gatherer
	Heptageniidae	Flat-Headed Mayflies	Predator
	Dytiscidae	Water Beetles	Predator
	Ephemerellidae	Spiny Crawler Mayflies	Gatherer
	Baetidae	Small Minnow Mayfly	Collector-Gatherer/ Scraper
	Gyrinidae	Whirligig Beetles	Predator
	Libellulidae	Skimmer Dragonflies	Predator
	Palaemonetes	Freshwater Shrimp	Gatherer
	Psephenidae	Water Pennies	Gatherer
SE/RC-9/1-002	Chironomidae	Non-Biting Midges	Gatherer
	Clam	Clam	Gatherer
	Dytiscidae	Water Beetles	Predator
SD-E2-003	Chironomidae	Non-Biting Midges	Gatherer
	Perlidae	Common Stoneflies	Predator
SE/RE-3-3-004	Chironomidae	Non-Biting Midges	Gatherer
	Clam	Clams	Gatherer
SD-C1-005	Amphipoda	Scuds	Scavenger
	Chironomidae	Non-Biting Midges	Gatherer
	Corixidae	Water Boatmen	Gatherer
	Dytiscidae	Water Beetles	Predator
SD-A1-006	Ceratopogonidae	Biting Midges	Predator
	Chironomidae	Non-Biting Midges	Gatherer
	Corixidae	Water Boatmen	Gatherer
	Elmidae	Riffle Beetles	Gatherer
SD-007	Chironomidae	Non-Biting Midges	Gatherer
	Clam	Clams	Gatherer
	Elmidae	Riffle Beetles	Gatherer
	Heptageniidae	Flat-Headed Mayflies	Predator
	Hydropsychidae	Net-Spinning Caddisflies	Gatherer or Predator
	Leptoceridae	Long-Horned Caddisflies	Gatherer or Predator
SD-008	Chironomidae	Non-Biting Midges	Gatherer
	Culicidae	Mosquitos	Predator
	Dytiscidae	Water Beetles	Predator
	Gyrinidae	Whirligig Beetles	Predator
	Heptageniidae	Flat-Headed Mayflies	Predator
	Leptoceridae	Long-Horned Caddisflies	Gatherer or Predator
	Limnephilidae	Northern Caddisflies	Gatherer or Predator
Between SE/RE-3-3-004 and SD-C1-005	Chironomidae	Non-Biting Midges	Gatherer
	Heptageniidae	Flat-Headed Mayflies	Predator
	Leptoceridae	Long-Horned Caddisflies	Gatherer or Predator
	Limnephilidae	Northern Caddisflies	Gatherer or Predator

Table 2: Macroinvertebrate Community Analysis

Macroinvertebrate Community		Family MBI Tolerance Value[1]	Sample Number								
			SD-J2-001	SE/RC-9/1-002	SD-E2-003	SE/RE-3-3-004	SD-C1-005	SD-A1-006	SD-007	SD-008	Between SE/RE-3-3-004 and SD-C1-005
			Sample Data								
Taxon	Common Name										
Tubificidae	Tubifex	9	5								
Cambaridae	Freshwater Crawfishes	6	2								
Ceratopogonidae	Biting Midges	6						2			
Chironomidae	Non-Biting Midges	8	33	42	47	67	37	14	23	34	8
Clam	Clams	8		1		1			3		
Corixidae	Water Boatmen	5					10	1			
Culicidae	Mosquitos	8								1	
Dytiscidae	Water Beetles	5	3	2			1			2	
Elmidae	Riffle Beetles	4						14	1		
Ephemerellidae	Spiny Crawler Mayflies	1	1								
Baetidae	Small Minnow Myflies	3	1								
Gyrinidae	Whirligig Beetles	4	1							1	
Heptageniidae	Flat-Headed Mayflies	3	3						2	1	11
Hyalella	Scuds	8					1				
Hydropsychidae	Net-Spinning Caddisflies	4							3		
Leptoceridae	Long-Horned Caddisflies	4							1	4	1
Libellulidae	Skimmer Dragonflies	2	1								
Limnephilidae	Northern Caddisflies	3								4	3
Palaemonetes	Freshwater Shrimp	6	1								
Perlidae	Common Stoneflies	2			1						
Psephenidae	Water Pennies	4	4								
No. MBI Organisms Counted[2]			55	45	48	68	49	31	33	47	23
MBI[3,5]			6.85	7.87	7.88	8	7.33	5.97	7.09	6.91	4.78
TBI□[4,5]			4.64	7	5	8	6.5	5.75	5.17	5	4.5
Total Number of Taxa			11	3	2	2	4	4	6	7	4

Notes:

1. Family MBI tolerance values (t□) are from http://www.epa.gov/owow/monitoring/rbp/index.html , 2006.
= taxon present, but has no MBI tolerance value.
2. A Maximum of 10 organisms was used for MBI calculations, according to Hilsenhoff, 1988.
3. Macroinvertebrate Biotic Index (MBI) =∑n□t□)/N where n□ = no. individuals in each listed taxon, t□ = tolerance rating for each listed taxon, and N = total no. of listed organisms counted (IPEA, 2002).
4. Mean tolerance value (TBI) = ∑t□/T where t□=tolerance value for each listed taxon and T = no. of listed taxon in the sample (from Lillie and Schlesser, 1994).
5. Biotic Index (MBI and TBI) Interpretation (from Hilsenhoff, 1987).

Value	Water Quality	Degree of Organic Pollution
0.00-3.50	Excellent	No apparent organic pollution
3.51-4.50	Very Good	Possible slight organic pollution
4.51-5.50	Good	Some organic pollution
5.51-6.50	Fair	Fairly significant organic pollution
6.51-7.50	Fairly Poor	Significant organic pollution
7.50-8.50	Poor	Very significant organic pollution
8.51-10.00	Very Poor	Severe organic pollution

Table 3: Benthic Macroinvertebrate Community Survey Results

		Sample Number								
		SD-J2-001	SE/RC-9/1-002	SD-E2-003	SE/RE-3-3-004	SD-C1-005	SD-A1-006	SD-007	SD-008	Between SE/RE-3-3-004 and SD-C1-005
		Sample Data								
Macroinvertebrate Community										
Taxon	Common Name									
Tubificidae	Tubifex	•								
Cambaridae	Freshwater Crawfishes	•								
Ceratopogonidae	Biting Midges						•			
Chironomidae	Non-Biting Midges	•	•	•	•	•	•	•	•	•
Clam	Clams		•		•			•		
Corixidae	Water Boatmen					•	•			
Culicidae	Mosquitos								•	
Dytiscidae	Water Beetles	•	•			•			•	
Elmidae	Riffle Beetles						•	•		
Ephemerellidae	Spiny Crawler Mayflies	•								
Baetidae	Small Minnow Myflies	•								
Gyrinidae	Whirligig Beetles	•							•	
Heptageniidae	Flat-Headed Mayflies	•						•	•	•
Hyalella	Scuds					•				
Hydropsychidae	Net-Spinning Caddisflies							•		
Leptoceridae	Long-Horned Caddisflies							•	•	•
Libellulidae	Skimmer Dragonflies	•								
Limnephilidae	Northern Caddisflies								•	•
Palaemonetes	Freshwater Shrimp	•								
Perlidae	Common Stoneflies			•						
Psephenidae	Water Pennies	•								
Total number of families		11	3	2	2	4	4	6	7	4

• = family present

APPENDIX E

BACKGROUND THRESHOLD VALUES

SUMMARY OF SEDIMENT BACKGROUND DATA
JCI - FOWLERVILLE

		Location	SDBG1	SDBG1	SDBG2	SDBG2	SDBG3	SDBG3	SDBG4	SDBG4	SDBG5	SDBG5
		Field ID:	SDBG1012-041803-01	SDBG11224-041803-01	SDBG21224-041803-01	SDBG2012-041803-01	SDBG3012-042103-01	SDBG31224-042103-01	SDBG4012-042103-01	SDBG41224-042103-01	SDBG5012-042103-01	SDBG51224-042103-01
		Date Sampled:	4/18/2003	4/18/2003	4/18/2003	4/18/2003	4/21/2003	4/21/2003	4/21/2003	4/21/2003	4/21/2003	4/21/2003
		Depth (ft):	0 - 12	12 - 24	12 - 24	0 - 12	0 - 12	12 - 24	0 - 12	12 - 24	0 - 12	12 - 24
Volatile Organic Compounds												
2-Methylnaphthalene	91-57-6	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Acenaphthene	83-32-9	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Acenaphthylene	208-96-8	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Anthracene	120-12-7	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Benz(a)anthracene	56-55-3	ug/kg	38 J	330 U	330 U	30 J	330 U	330 U	86 J	330 U	120 J	330 U
Benzo(a)pyrene	50-32-8	ug/kg	54 J	330 U	330 U	37 J	330 U	330 U	84 J	330 U	110 J	330 U
Benzo(b)fluoranthene	205-99-2	ug/kg	98 J	330 U	330 U	64 J	330 U	330 U	110 J	330 U	110 J	330 U
Benzo(g,h,i)perylene	191-24-2	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	35 J	330 U	47 J	330 U
Benzo(k)fluoranthene	207-08-9	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	69 J	330 U	92 J	330 U
Chrysene	218-01-9	ug/kg	56 J	330 U	330 U	42 J	330 U	330 U	110 J	330 U	140 J	330 U
Dibenz(a,h)anthracene	53-70-3	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Fluoranthene	206-44-0	ug/kg	130 J	330 U	330 U	97 J	31 J	330 U	260 J	22 J	300 J	330 U
Fluorene	86-73-7	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	32 J	330 U	46 J	330 U
Naphthalene	91-20-3	ug/kg	430 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
Phenanthrene	85-01-8	ug/kg	59 J	330 U	330 U	40 J	330 U	330 U	120 J	330 U	110 J	330 U
Pyrene	129-00-0	ug/kg	100 J	330 U	330 U	73 J	27 J	330 U	200 J	330 U	240 J	330 U
PNAs, Total	TPNA	ug/kg	535	NA	NA	383	58	NA	1106	22	1315	NA
Polychlorinated Biphenyls (PCBs):												
PCB, Total	TPCB	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals:												
Aluminum, Total	7429-90-5	mg/kg	NA	NA	3710	2400	1830	1340	1780	NA	2970	NA
Arsenic, Total	7440-38-2	mg/kg	27	18	9	3.5	6.1	1.2	2.8	11	9.2	7.7
Barium, Total	7440-39-3	mg/kg	178	53	51	20	24	6.6	15	19	56	18
Cadmium, Total	7440-43-9	mg/kg	1.1	0.4	0.44	0.17	0.25	0.2	0.16	0.26	0.36	0.35
Chromium, Total	7440-47-3	mg/kg	14	6.8	6.2	4.1	4.6	3.6	3.9	5.7	6.4	4.5
Copper, Total	7440-50-8	mg/kg	16	5.2	6.2	2.7	3.9	3.2	4.4	3.8	9.3	5.1
Lead, Total	7439-92-1	mg/kg	17	4.4	14	5	3.2	1.7	3.4	3	10	7.5
Mercury, Total	7439-97-6	mg/kg	0.12	0.082 J	0.058 J	0.047 J	0.016 J	0.015 J	0.03 J	0.054 J	0.055 J	0.037 J
Nickel, Total	7440-02-0	mg/kg	15	7.3	7	5.3	6.9	6.2	4.3	8.3	6.3	6.5
Selenium, Total	7782-49-2	mg/kg	1.1	2.4	1	0.28 U	0.37	0.24 U	0.26 U	0.18 J	0.36	0.23 J
Silver, Total	7440-22-4	mg/kg	0.13 J	0.06 J	0.06 J	0.026 J	0.033 J	0.028 J	0.02 J	0.038 J	0.05 J	0.044 J
Zinc, Total	7440-66-6	mg/kg	96	30	39	20	18	12	16	18	34	20
Chromium(VI)	18540-29-9	mg/kg	60 U	45 U	58 U	15 U	11 U	2 U	2 U	18 U	29 U	14 U
Miscellaneous Parameters:												
Fractional Organic Carbon	FOC	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	TOC	%	16	9.2	6.5	3.1	1.7	0.2	0.9	1.5	5	3.2

NOTES:
U = Non-detect, value is reporting limit
J = Estimated value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

SUMMARY OF SEDIMENT BACKGROUND DATA
JCI - FOWLERVILLE

		Location	SE/RC-11/1	SE/RC-11/2	SE/RC-12/1	SE/RC-12/2	SE/RC-13/1	SE/RC-13/2	SE/RC-13/2	SE/RC-24-1	SE/RC-25-1	SE/RC-100/1	SE/RC-101/1	SE/RC-102/1	SE/RC-103/1	SD-007	SE/RC-13/1-008
		Field ID:	SE/RC-11/1	SE/RC-11/2	SE/RC-12/1	SE/RC-12/2	SE/RC-13/1	SE/RC-13/2	SE/RC-13/2 Dup	SRC-24/136787	SRC-25/136787	SE/RC-100/1	SE/RC-101/1	SE/RC-102/1	SE/RC-103/1	7/25/2007	7/25/2007
		Date Sampled:	1/1/1994	1/1/1994	1/1/1994	1/1/1994	1/1/1994	1/1/1994	1/1/1994	9/18/2000	9/18/2000	9/1/2000	9/1/2000	9/1/2000	9/1/2000	SD-007	SE/RC-13/1
		Depth (ft):	0 - 3	6 - 12	0 - 3	6 - 12	0 - 3	6 - 12	6 - 12	0 - 0	0 - 0	0 - 3	0 - 3	0 - 3	0 - 3	0-12	0-12
Volatile Organic Compounds																	
2-Methylnaphthalene	91-57-6	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	420 U	450 U	370 U	NA	NA	NA
Acenaphthene	83-32-9	ug/kg	NA	NA	NA	NA	NA	NA	NA	54 U	47 U	NA	NA	NA	NA	<1220 U	<1220 U
Acenaphthylene	208-96-8	ug/kg	NA	NA	NA	NA	NA	NA	NA	57 U	49 U	NA	NA	NA	NA	<2440 U	<2440 U
Anthracene	120-12-7	ug/kg	67 J	370 U	540 U	440 U	5600 U	6300 U	550 U	83 U	71 U	420 U	450 U	370 U	450 U	<1220 U	<1220 U
Benz(a)anthracene	56-55-3	ug/kg	230 J	370 U	540 U	440 U	5600 U	6300 U	550 U	97 J	57 U	80 J	450 U	370 U	120 J	<610 U	<610 U
Benzo(a)pyrene	50-32-8	ug/kg	260 J	370 U	220 J	67 J	5600 U	6300 U	550 U	76 J	66 J	65 J	450 U	370 U	130 J	**155**	<61.0 U
Benzo(b)fluoranthene	205-99-2	ug/kg	260 J	370 U	540 U	87 J	5600 U	6300 U	550 U	75 J	54 J	66 J	450 U	370 U	170 J	<610 U	<610 U
Benzo(g,h,i)perylene	191-24-2	ug/kg	160 J	370 U	540 U	440 U	5600 U	6300 U	550 U	67 U	58 U	420 U	450 U	370 U	110 J	<1220 U	<1220 U
Benzo(k)fluoranthene	207-08-9	ug/kg	270 J	370 U	540 U	440 U	5600 U	6300 U	550 U	120 U	110 U	420 U	450 U	370 U	450 U	<1220 U	<1220 U
Chrysene	218-01-9	ug/kg	350 J	370 U	540 U	71 J	5600 U	6300 U	550 U	NA	NA	85 J	450 U	370 U	160 J	<1220 U	<1220 U
Dibenz(a,h)anthracene	53-70-3	ug/kg	NA	NA	NA	NA	NA	NA	NA	81 U	70 U	NA	NA	NA	NA	<61.0 U	<61.0 U
Fluoranthene	206-44-0	ug/kg	560 J	370 U	72 J	160 J	5600 U	6300 U	550 U	170 J	110 J	130 J	450 U	370 U	270 J	<1220 U	<1220 U
Fluorene	86-73-7	ug/kg	660 U	370 U	540 U	440 U	5600 U	6300 U	550 U	64 U	55 U	420 U	450 U	370 U	450 U	<1220 U	<1220 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/kg	160 J	370 U	540 U	440 U	5600 U	6300 U	550 U	83 U	71 U	420 U	450 U	370 U	83 J	<610 U	<610 U
Naphthalene	91-20-3	ug/kg	NA	NA	NA	NA	NA	NA	NA	80 U	68 U	420 U	450 U	370 U	450 U	<1220 U	<1220 U
Phenanthrene	85-01-8	ug/kg	240 J	370 U	540 U	120 J	5600 U	6300 U	550 U	65 U	56 U	420 U	450 U	370 U	130 J	<1220 U	<1220 U
Pyrene	129-00-0	ug/kg	430 J	370 U	67 J	120 J	5600 U	6300 U	550 U	150 J	120 J	120 J	450 U	370 U	290 J	<1220 U	<1220 U
PNAs, Total	TPNA	ug/kg	2987	NA	359	625	NA	NA	NA	568	350	546	NA	NA	1463	155	ND
Polychlorinated Biphenyls (PCBs):																	
PCB, Total	TPCB	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	14 J	97	NA	NA	ND	ND
Total Metals:																	
Aluminum, Total	7429-90-5	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, Total	7440-38-2	mg/kg	13.3	35.8	13.7	3.7	9.4	12.5	9.9	11.1	4.8	3	10.3	4.4	3.8	<3.42 U	**7.11**
Barium, Total	7440-39-3	mg/kg	87.2	31.1	50.8	21	64.3	73.8	53.9	58.7	38.4	20.1	72.9	15.1	32.5	NA	NA
Cadmium, Total	7440-43-9	mg/kg	2	1.1	0.82 U	0.67 U	0.84 U	0.96 U	0.83 U	0.52 B	0.26 B	0.64 U	0.68 U	0.56 U	0.2 J	<0.683 U	<0.678 U
Chromium, Total	7440-47-3	mg/kg	8.2	8.3	8	5	10.5	12.3	6.5	6.7	5.6	12.5	18	6	6.3	**3.27**	**6.61**
Copper, Total	7440-50-8	mg/kg	21.7	10.4	11.9	6.2	16.4	13.9	8.2	NA	NA	NA	NA	NA	NA	<3.42 U	**9.29**
Lead, Total	7439-92-1	mg/kg	15.6	4.7	10.6	4.4	9.1	10	7.4	8.7	11	3.1	6.2	3.3	10.8	<3.42 U	**4.64**
Mercury, Total	7439-97-6	mg/kg	0.2 U	0.11 U	0.16 U	0.13 U	0.17 U	0.19 U	0.17 U	0.038 B	0.032 B	0.011 J	0.0053 J	0.0074 J	0.021 J	NA	NA
Nickel, Total	7440-02-0	mg/kg	8	7.5	8.2	5.8	9.4	11.6	8	NA	NA	NA	NA	NA	NA	<3.42 U	**9.16**
Selenium, Total	7782-49-2	mg/kg	1 U	1.1 U	1.3 J	0.43 J	0.84 U	0.96 U	0.36 J	0.92 B	0.61 U	1.7 U	1.8 U	1.5 U	1.8 U	NA	NA
Silver, Total	7440-22-4	mg/kg	0.9 J	1.1 U	0.57 J	1.3 U	1 JB	1 JB	1.7 U	0.72 U	0.62 U	NA	NA	NA	NA	NA	NA
Zinc, Total	7440-66-6	mg/kg	78.5	16.2	43.3	22.5	55.1 B	59.2 B	33.9	NA	NA	NA	NA	NA	NA	**10.1**	**21.7**
Chromium(VI)	18540-29-9	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Miscellaneous Parameters:																	
Fractional Organic Carbon	FOC	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	TOC	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

U = Non-detect, value is reporting limit

J = Estimated value below reporting limit

NA = Parameter not analyzed

B = Blank qualified result

--- = Parameter not analyzed

Table E-2
Outlier Tests for Selected Variables

No Outlier Test for PCB

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Test for Suspected Outliers with Dixon test	1
Test for Suspected Outliers with Rosner test	1

Dixon's Outlier Test for PNA

Number of data = 13
10% critical value: 0.467
5% critical value: 0.521
1% critical value: 0.615

1. 2.987 is a Potential Outlier (Upper Tail)

Test Statistic: 0.590

For 10% significance level, 2.987 is an outlier.
For 5% significance level, 2.987 is an outlier.
For 1% significance level, 2.987 is not an outlier.

2. 0.058 is a Potential Outlier (Lower Tail)

Test Statistic: 0.208

For 10% significance level, 0.058 is not an outlier.
For 5% significance level, 0.058 is not an outlier.
For 1% significance level, 0.058 is not an outlier.

Dixon's Outlier Test for pna outlier

Number of data = 12
10% critical value: 0.49
5% critical value: 0.546
1% critical value: 0.642

1. 1.463 is a Potential Outlier (Upper Tail)

Test Statistic: 0.273

For 10% significance level, 1.463 is not an outlier.
For 5% significance level, 1.463 is not an outlier.
For 1% significance level, 1.463 is not an outlier.

2. 0.058 is a Potential Outlier (Lower Tail)

Test Statistic: 0.232

For 10% significance level, 0.058 is not an outlier.
For 5% significance level, 0.058 is not an outlier.
For 1% significance level, 0.058 is not an outlier.

Dixon's Outlier Test for Aluminum

Number of data = 4
10% critical value: 0.679
5% critical value: 0.765
1% critical value: 0.889

1. 2970 is a Potential Outlier (Upper Tail)

Test Statistic: 0.479

For 10% significance level, 2970 is not an outlier.
For 5% significance level, 2970 is not an outlier.
For 1% significance level, 2970 is not an outlier.

2. 1780 is a Potential Outlier (Lower Tail)

Test Statistic: 0.042

For 10% significance level, 1780 is not an outlier.
For 5% significance level, 1780 is not an outlier.
For 1% significance level, 1780 is not an outlier.

Dixon's Outlier Test for As outlier

Number of data = 19
10% critical value: 0.412
5% critical value: 0.462
1% critical value: 0.547

1. 27 is a Potential Outlier (Upper Tail)

Test Statistic: 0.571

For 10% significance level, 27 is an outlier.
For 5% significance level, 27 is an outlier.
For 1% significance level, 27 is an outlier.

2. 1.71 is a Potential Outlier (Lower Tail)

Test Statistic: 0.111

For 10% significance level, 1.71 is not an outlier.
For 5% significance level, 1.71 is not an outlier.
For 1% significance level, 1.71 is not an outlier.

Table E-2
Outlier Tests for Selected Variables

Dixon's Outlier Test for Arsenic

Number of data = 20
10% critical value: 0.401
5% critical value: 0.45
1% critical value: 0.535

1. 35.8 is a Potential Outlier (Upper Tail)

Test Statistic: 0.674

For 10% significance level, 35.8 is an outlier.
For 5% significance level, 35.8 is an outlier.
For 1% significance level, 35.8 is an outlier.

2. 1.71 is a Potential Outlier (Lower Tail)

Test Statistic: 0.108

For 10% significance level, 1.71 is not an outlier.
For 5% significance level, 1.71 is not an outlier.
For 1% significance level, 1.71 is not an outlier.

Dixon's Outlier Test for Ba outlier

Number of data = 17
10% critical value: 0.438
5% critical value: 0.49
1% critical value: 0.577

1. 87.2 is a Potential Outlier (Upper Tail)

Test Statistic: 0.213

For 10% significance level, 87.2 is not an outlier.
For 5% significance level, 87.2 is not an outlier.
For 1% significance level, 87.2 is not an outlier.

2. 15 is a Potential Outlier (Lower Tail)

Test Statistic: 0.086

For 10% significance level, 15 is not an outlier.
For 5% significance level, 15 is not an outlier.
For 1% significance level, 15 is not an outlier.

Dixon's Outlier Test for Barium

Number of data = 18
10% critical value: 0.424
5% critical value: 0.475
1% critical value: 0.561

1. 178 is a Potential Outlier (Upper Tail)

Test Statistic: 0.659

For 10% significance level, 178 is an outlier.
For 5% significance level, 178 is an outlier.
For 1% significance level, 178 is an outlier.

2. 15 is a Potential Outlier (Lower Tail)

Test Statistic: 0.085

For 10% significance level, 15 is not an outlier.
For 5% significance level, 15 is not an outlier.
For 1% significance level, 15 is not an outlier.

Dixon's Outlier Test for Cd outlier

Number of data = 19
10% critical value: 0.412
5% critical value: 0.462
1% critical value: 0.547

1. 1.1 is a Potential Outlier (Upper Tail)

Test Statistic: 0.644

For 10% significance level, 1.1 is an outlier.
For 5% significance level, 1.1 is an outlier.
For 1% significance level, 1.1 is an outlier.

2. 0.16 is a Potential Outlier (Lower Tail)

Test Statistic: 0.111

For 10% significance level, 0.16 is not an outlier.
For 5% significance level, 0.16 is not an outlier.
For 1% significance level, 0.16 is not an outlier.

Table E-2
Outlier Tests for Selected Variables

Dixon's Outlier Test for Cadmium

Number of data = 20
10% critical value: 0.401
5% critical value: 0.45
1% critical value: 0.535

1. 2 is a Potential Outlier (Upper Tail)

Test Statistic: 0.500

For 10% significance level, 2 is an outlier.
For 5% significance level, 2 is an outlier.
For 1% significance level, 2 is not an outlier.

2. 0.16 is a Potential Outlier (Lower Tail)

Test Statistic: 0.043

For 10% significance level, 0.16 is not an outlier.
For 5% significance level, 0.16 is not an outlier.
For 1% significance level, 0.16 is not an outlier.

Dixon's Outlier Test for Cr outlier

Number of data = 19
10% critical value: 0.412
5% critical value: 0.462
1% critical value: 0.547

1. 14 is a Potential Outlier (Upper Tail)

Test Statistic: 0.172

For 10% significance level, 14 is not an outlier.
For 5% significance level, 14 is not an outlier.
For 1% significance level, 14 is not an outlier.

2. 3.27 is a Potential Outlier (Lower Tail)

Test Statistic: 0.092

For 10% significance level, 3.27 is not an outlier.
For 5% significance level, 3.27 is not an outlier.
For 1% significance level, 3.27 is not an outlier.

Dixon's Outlier Test for Copper

Number of data = 14
10% critical value: 0.492
5% critical value: 0.546
1% critical value: 0.641

1. 21.7 is a Potential Outlier (Upper Tail)

Test Statistic: 0.320

For 10% significance level, 21.7 is not an outlier.
For 5% significance level, 21.7 is not an outlier.
For 1% significance level, 21.7 is not an outlier.

2. 1.71 is a Potential Outlier (Lower Tail)

Test Statistic: 0.153

For 10% significance level, 1.71 is not an outlier.
For 5% significance level, 1.71 is not an outlier.
For 1% significance level, 1.71 is not an outlier.

Dixon's Outlier Test for Ni outlier

Number of data = 13
10% critical value: 0.467
5% critical value: 0.521
1% critical value: 0.615

1. 11.6 is a Potential Outlier (Upper Tail)

Test Statistic: 0.334

For 10% significance level, 11.6 is not an outlier.
For 5% significance level, 11.6 is not an outlier.
For 1% significance level, 11.6 is not an outlier.

2. 1.71 is a Potential Outlier (Lower Tail)

Test Statistic: 0.467

For 10% significance level, 1.71 is not an outlier.
For 5% significance level, 1.71 is not an outlier.
For 1% significance level, 1.71 is not an outlier.

Table E-2
Outlier Tests for Selected Variables

Dixon's Outlier Test for Chromium

Number of data = 20
10% critical value: 0.401
5% critical value: 0.45
1% critical value: 0.535

1. 18 is a Potential Outlier (Upper Tail)

Test Statistic: 0.396

For 10% significance level, 18 is not an outlier.
For 5% significance level, 18 is not an outlier.
For 1% significance level, 18 is not an outlier.

2. 3.27 is a Potential Outlier (Lower Tail)

Test Statistic: 0.090

For 10% significance level, 3.27 is not an outlier.
For 5% significance level, 3.27 is not an outlier.
For 1% significance level, 3.27 is not an outlier.

Dixon's Outlier Test for Lead

Number of data = 20
10% critical value: 0.401
5% critical value: 0.45
1% critical value: 0.535

1. 17 is a Potential Outlier (Upper Tail)

Test Statistic: 0.435

For 10% significance level, 17 is an outlier.
For 5% significance level, 17 is not an outlier.
For 1% significance level, 17 is not an outlier.

2. 1.71 is a Potential Outlier (Lower Tail)

Test Statistic: 0.160

For 10% significance level, 1.71 is not an outlier.
For 5% significance level, 1.71 is not an outlier.
For 1% significance level, 1.71 is not an outlier.

Dixon's Outlier Test for Nickel

Number of data = 14
10% critical value: 0.492
5% critical value: 0.546
1% critical value: 0.641

1. 15 is a Potential Outlier (Upper Tail)

Test Statistic: 0.577

For 10% significance level, 15 is an outlier.
For 5% significance level, 15 is an outlier.
For 1% significance level, 15 is not an outlier.

2. 1.71 is a Potential Outlier (Lower Tail)

Test Statistic: 0.467

For 10% significance level, 1.71 is not an outlier.
For 5% significance level, 1.71 is not an outlier.
For 1% significance level, 1.71 is not an outlier.

Dixon's Outlier Test for Mercury

Number of data = 18
10% critical value: 0.424
5% critical value: 0.475
1% critical value: 0.561

1. 0.12 is a Potential Outlier (Upper Tail)

Test Statistic: 0.229

For 10% significance level, 0.12 is not an outlier.
For 5% significance level, 0.12 is not an outlier.
For 1% significance level, 0.12 is not an outlier.

2. 0.0053 is a Potential Outlier (Lower Tail)

Test Statistic: 0.064

For 10% significance level, 0.0053 is not an outlier.
For 5% significance level, 0.0053 is not an outlier.
For 1% significance level, 0.0053 is not an outlier.

Table E-2
Outlier Tests for Selected Variables

Dixon's Outlier Test for Selenium

Number of data = 18
10% critical value: 0.424
5% critical value: 0.475
1% critical value: 0.561

1. 1.3 is a Potential Outlier (Upper Tail)

Test Statistic: 0.382

For 10% significance level, 1.3 is not an outlier.
For 5% significance level, 1.3 is not an outlier.
For 1% significance level, 1.3 is not an outlier.

2. 0.13 is a Potential Outlier (Lower Tail)

Test Statistic: 0.222

For 10% significance level, 0.13 is not an outlier.
For 5% significance level, 0.13 is not an outlier.
For 1% significance level, 0.13 is not an outlier.

Dixon's Outlier Test for Silver

Number of data = 14
10% critical value: 0.492
5% critical value: 0.546
1% critical value: 0.641

1. 1 is a Potential Outlier (Upper Tail)

Test Statistic: 0.103

For 10% significance level, 1 is not an outlier.
For 5% significance level, 1 is not an outlier.
For 1% significance level, 1 is not an outlier.

2. 0.02 is a Potential Outlier (Lower Tail)

Test Statistic: 0.015

For 10% significance level, 0.02 is not an outlier.
For 5% significance level, 0.02 is not an outlier.
For 1% significance level, 0.02 is not an outlier.

Dixon's Outlier Test for Zinc

Number of data = 14
10% critical value: 0.492
5% critical value: 0.546
1% critical value: 0.641

1. 96 is a Potential Outlier (Upper Tail)

Test Statistic: 0.461

For 10% significance level, 96 is not an outlier.
For 5% significance level, 96 is not an outlier.
For 1% significance level, 96 is not an outlier.

2. 10.1 is a Potential Outlier (Lower Tail)

Test Statistic: 0.124

For 10% significance level, 10.1 is not an outlier.
For 5% significance level, 10.1 is not an outlier.
For 1% significance level, 10.1 is not an outlier.

Table E-3
General Background Statistics

General Background Statistics for Full Data Sets

User Selected Options	
From File	WorkSheet_a.wst
Full Precision	OFF
Confidence Coefficient	95%
Coverage	90%
Different or Future K Values	1
Number of Bootstrap Operations	2000

pna outlier

General Statistics			
Total Number of Samples	12	Number of Unique Samples	12
Raw Statistics		Log-Transformed Statistics	
Minimum	0.058	Minimum	-2.847
Maximum	**1.463**	Maximum	0.38
Second Largest	1.315	Second Largest	0.274
First Quartile	0.352	First Quartile	-1.043
Median	0.541	Median	-0.615
Third Quartile	0.986	Third Quartile	-0.0419
Mean	0.622	Mean	-0.771
SD	0.445	SD	0.907
Coefficient of Variation	0.715		
Skewness	0.878		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.891	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	1.605	95% UTL with 90% Coverage	3.429
95% UPL (t)	**1.453**	**95% UPL (t)**	**2.518**
90% Percentile (z)	1.192	90% Percentile (z)	1.478
95% Percentile (z)	1.353	95% Percentile (z)	2.054
99% Percentile (z)	1.656	99% Percentile (z)	3.811
Gamma Distribution Test		Data Distribution Test	
k star	1.432	Data appear Normal at 5% Significance Level	
Theta Star	0.434		
nu star	34.38		
A-D Test Statistic	0.32	Nonparametric Statistics	
5% A-D Critical Value	0.743	90% Percentile	1.419
K-S Test Statistic	0.159	95% Percentile	1.463

Table E-3

General Background Statistics

5% K-S Critical Value	0.249	99% Percentile	1.463
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	1.463
90% Percentile	1.311	95% Percentile Bootstrap UTL with 90% Coverage	1.463
95% Percentile	**1.645**	95% BCA Bootstrap UTL with 90% Coverage	1.433
99% Percentile	2.403	95% UPL	1.463
		95% Chebyshev UPL	2.639
		Upper Threshold Limit Based upon IQR	1.936

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

As outlier

General Statistics			
Total Number of Samples	18	Number of Unique Samples	18
Raw Statistics		Log-Transformed Statistics	
Minimum	1.71	Minimum	0.536
Maximum	13.7	Maximum	2.617
Second Largest	13.3	Second Largest	2.588
First Quartile	3.65	First Quartile	1.294
Median	6.605	Median	1.885
Third Quartile	10.5	Third Quartile	2.351
Mean	7.24	Mean	1.811
SD	3.97	SD	0.628
Coefficient of Variation	0.548		
Skewness	0.266		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	15.08	95% UTL with 90% Coverage	21.12
95% UPL (t)	**14.34**	**95% UPL (t)**	**18.79**
90% Percentile (z)	12.33	90% Percentile (z)	13.68
95% Percentile (z)	13.77	95% Percentile (z)	17.18
99% Percentile (z)	16.48	99% Percentile (z)	26.35
Gamma Distribution Test		Data Distribution Test	
k star	2.643	Data appear Normal at 5% Significance Level	
Theta Star	2.739		
nu star	95.15		
A-D Test Statistic	0.511	Nonparametric Statistics	
5% A-D Critical Value	0.745	90% Percentile	13.34
K-S Test Statistic	0.179	95% Percentile	13.7
5% K-S Critical Value	0.205	99% Percentile	13.7
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	13.7
90% Percentile	13.21	95% Percentile Bootstrap UTL with 90% Coverage	13.7
95% Percentile	**15.77**	95% BCA Bootstrap UTL with 90% Coverage	13.7
99% Percentile	21.35	95% UPL	13.7
		95% Chebyshev UPL	25.02
		Upper Threshold Limit Based upon IQR	20.78

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3
General Background Statistics

Ba outlier

General Statistics			
Total Number of Samples	17	Number of Unique Samples	17
Raw Statistics		Log-Transformed Statistics	
Minimum	15	Minimum	2.708
Maximum	87.2	Maximum	4.468
Second Largest	73.8	Second Largest	4.301
First Quartile	20.55	First Quartile	3.023
Median	38.4	Median	3.648
Third Quartile	61.5	Third Quartile	4.118
Mean	43.22	Mean	3.614
SD	23.15	SD	0.588
Coefficient of Variation	0.536		
Skewness	0.375		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.922	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.892	Shapiro Wilk Critical Value	0.892
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	89.58	95% UTL with 90% Coverage	120.4
95% UPL (t)	**84.82**	**95% UPL (t)**	**106.7**
90% Percentile (z)	72.9	90% Percentile (z)	78.86
95% Percentile (z)	81.31	95% Percentile (z)	97.64
99% Percentile (z)	97.09	99% Percentile (z)	145.7
Gamma Distribution Test		Data Distribution Test	
k star	2.877	Data appear Normal at 5% Significance Level	
Theta Star	15.02		
nu star	97.81		
A-D Test Statistic	0.491	Nonparametric Statistics	
5% A-D Critical Value	0.744	90% Percentile	76.48
K-S Test Statistic	0.157	95% Percentile	87.2
5% K-S Critical Value	0.21	99% Percentile	87.2
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	87.2
90% Percentile	77.39	95% Percentile Bootstrap UTL with 90% Coverage	87.2
95% Percentile	**91.81**	95% BCA Bootstrap UTL with 90% Coverage	87.2
99% Percentile	123.2	95% UPL	87.2
		95% Chebyshev UPL	147.1
		Upper Threshold Limit Based upon IQR	122.9

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

Cd outlier

General Statistics			
Total Number of Samples	17	Number of Unique Samples	17
Raw Statistics		Log-Transformed Statistics	
Minimum	0.16	Minimum	-1.833
Maximum	0.52	Maximum	-0.654
Second Largest	0.48	Second Largest	-0.734
First Quartile	0.255	First Quartile	-1.367
Median	0.339	Median	-1.082
Third Quartile	0.413	Third Quartile	-0.886
Mean	0.329	Mean	-1.161
SD	0.102	SD	0.34
Coefficient of Variation	0.31		
Skewness	0.0141		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Test Statistic	0.94
Shapiro Wilk Critical Value	0.892	Shapiro Wilk Critical Value	0.892
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	0.534	95% UTL with 90% Coverage	0.618
95% UPL (t)	**0.513**	**95% UPL (t)**	**0.576**
90% Percentile (z)	0.46	90% Percentile (z)	0.484
95% Percentile (z)	0.497	95% Percentile (z)	0.548
99% Percentile (z)	0.567	99% Percentile (z)	0.69
Gamma Distribution Test		Data Distribution Test	
k star	8.31	Data appear Normal at 5% Significance Level	
Theta Star	0.0396		
nu star	282.5		
A-D Test Statistic	0.338	Nonparametric Statistics	
5% A-D Critical Value	0.739	90% Percentile	0.488
K-S Test Statistic	0.153	95% Percentile	0.52
5% K-S Critical Value	0.209	99% Percentile	0.52
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	0.52
90% Percentile	0.482	95% Percentile Bootstrap UTL with 90% Coverage	0.52
95% Percentile	**0.537**	95% BCA Bootstrap UTL with 90% Coverage	0.52
99% Percentile	0.652	95% UPL	0.52
		95% Chebyshev UPL	0.787
		Upper Threshold Limit Based upon IQR	0.649

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

Cr outlier

General Statistics			
Total Number of Samples	19	Number of Unique Samples	19
Raw Statistics		Log-Transformed Statistics	
Minimum	3.27	Minimum	1.185
Maximum	**14**	Maximum	2.639
Second Largest	12.5	Second Largest	2.526
First Quartile	5	First Quartile	1.609
Median	6.5	Median	1.872
Third Quartile	8.3	Third Quartile	2.116
Mean	7.304	Mean	1.91
SD	3.055	SD	0.405
Coefficient of Variation	0.418		
Skewness	0.915		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.907	Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical Value	0.901	Shapiro Wilk Critical Value	0.901
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	13.26	95% UTL with 90% Coverage	14.86
95% UPL (t)	**12.74**	**95% UPL (t)**	**13.87**
90% Percentile (z)	11.22	90% Percentile (z)	11.34
95% Percentile (z)	12.33	95% Percentile (z)	13.14
99% Percentile (z)	14.41	99% Percentile (z)	17.31
Gamma Distribution Test		Data Distribution Test	
k star	5.545	Data appear Normal at 5% Significance Level	
Theta Star	1.317		
nu star	210.7		
A-D Test Statistic	0.366	Nonparametric Statistics	
5% A-D Critical Value	0.742	90% Percentile	12.5
K-S Test Statistic	0.166	95% Percentile	14
5% K-S Critical Value	0.199	99% Percentile	14
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	14
90% Percentile	11.45	95% Percentile Bootstrap UTL with 90% Coverage	14
95% Percentile	**13.04**	95% BCA Bootstrap UTL with 90% Coverage	14
99% Percentile	16.37	95% UPL	14
		95% Chebyshev UPL	20.97
		Upper Threshold Limit Based upon IQR	13.25

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3
General Background Statistics

Ni outlier

General Statistics			
Total Number of Samples	13	Number of Unique Samples	12
Raw Statistics		Log-Transformed Statistics	
Minimum	1.71	Minimum	0.536
Maximum	**11.6**	Maximum	2.451
Second Largest	9.4	Second Largest	2.241
First Quartile	5.55	First Quartile	1.713
Median	7.5	Median	2.015
Third Quartile	8.68	Third Quartile	2.159
Mean	7.09	Mean	1.875
SD	2.505	SD	0.48
Coefficient of Variation	0.353		
Skewness	-0.438		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.979	Shapiro Wilk Test Statistic	0.827
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	12.49	95% UTL with 90% Coverage	18.34
95% UPL (t)	**11.72**	95% UPL (t)	15.84
90% Percentile (z)	10.3	90% Percentile (z)	12.06
95% Percentile (z)	11.21	95% Percentile (z)	14.36
99% Percentile (z)	12.92	99% Percentile (z)	19.91
Gamma Distribution Test		Data Distribution Test	
k star	4.781	Data appear Normal at 5% Significance Level	
Theta Star	1.483		
nu star	124.3		
A-D Test Statistic	0.529	Nonparametric Statistics	
5% A-D Critical Value	0.735	90% Percentile	10.72
K-S Test Statistic	0.147	95% Percentile	11.6
5% K-S Critical Value	0.237	99% Percentile	11.6
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	11.6
90% Percentile	11.43	95% Percentile Bootstrap UTL with 90% Coverage	11.6
95% Percentile	**13.13**	95% BCA Bootstrap UTL with 90% Coverage	10.94
99% Percentile	16.71	95% UPL	11.6
		95% Chebyshev UPL	18.42
		Upper Threshold Limit Based upon IQR	13.38

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

Al

General Statistics			
Total Number of Samples	4	Number of Unique Samples	4
Raw Statistics		Log-Transformed Statistics	
Minimum	1780	Minimum	7.484
Maximum	**2970**	Maximum	7.996
Second Largest	2400	Second Largest	7.783
First Quartile	1793	First Quartile	7.491
Median	2115	Median	7.648
Third Quartile	2828	Third Quartile	7.943
Mean	2245	Mean	7.694
SD	559.2	SD	0.242
Coefficient of Variation	0.249		
Skewness	0.811		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.748	Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	4572	95% UTL with 90% Coverage	6022
95% UPL (t)	3716	95% UPL (t)	4155
90% Percentile (z)	2962	90% Percentile (z)	2995
95% Percentile (z)	3165	95% Percentile (z)	3271
99% Percentile (z)	3546	99% Percentile (z)	3859
Gamma Distribution Test		Data Distribution Test	
k star	5.772	Data appear Normal at 5% Significance Level	
Theta Star	388.9		
nu star	46.18		
A-D Test Statistic	0.379	Nonparametric Statistics	
5% A-D Critical Value	0.657	90% Percentile	2970
K-S Test Statistic	0.306	95% Percentile	2970
5% K-S Critical Value	0.394	99% Percentile	2970
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	2970
90% Percentile	3495	95% Percentile Bootstrap UTL with 90% Coverage	2970
95% Percentile	3970	95% BCA Bootstrap UTL with 90% Coverage	2970
99% Percentile	4967	95% UPL	2970
		95% Chebyshev UPL	4970
		Upper Threshold Limit Based upon IQR	4380

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3
General Background Statistics

Cu

General Statistics			
Total Number of Samples	14	Number of Unique Samples	14
Raw Statistics		Log-Transformed Statistics	
Minimum	1.71	Minimum	0.536
Maximum	**21.7**	Maximum	3.077
Second Largest	16.4	Second Largest	2.797
First Quartile	4.275	First Quartile	1.451
Median	9.295	Median	2.229
Third Quartile	14.43	Third Quartile	2.667
Mean	9.714	Mean	2.061
SD	5.824	SD	0.737
Coefficient of Variation	0.6		
Skewness	0.5		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	22	95% UTL with 90% Coverage	37.18
95% UPL (t)	**20.39**	**95% UPL (t)**	**30.34**
90% Percentile (z)	17.18	90% Percentile (z)	20.2
95% Percentile (z)	19.29	95% Percentile (z)	26.41
99% Percentile (z)	23.26	99% Percentile (z)	43.64
Gamma Distribution Test		Data Distribution Test	
k star	2.019	Data appear Normal at 5% Significance Level	
Theta Star	4.812		
nu star	56.52		
A-D Test Statistic	0.206	Nonparametric Statistics	
5% A-D Critical Value	0.744	90% Percentile	19.05
K-S Test Statistic	0.128	95% Percentile	21.7
5% K-S Critical Value	0.231	99% Percentile	21.7
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	21.7
90% Percentile	18.85	95% Percentile Bootstrap UTL with 90% Coverage	21.7
95% Percentile	**22.97**	95% BCA Bootstrap UTL with 90% Coverage	19.58
99% Percentile	32.11	95% UPL	21.7
		95% Chebyshev UPL	35.99
		Upper Threshold Limit Based upon IQR	29.65

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3
General Background Statistics

Pb

General Statistics			
Total Number of Samples	20	Number of Unique Samples	19
Raw Statistics		Log-Transformed Statistics	
Minimum	1.71	Minimum	0.536
Maximum	**17**	Maximum	2.833
Second Largest	15.6	Second Largest	2.747
First Quartile	3.65	First Quartile	1.288
Median	6.8	Median	1.913
Third Quartile	10.45	Third Quartile	2.346
Mean	7.493	Mean	1.847
SD	4.258	SD	0.615
Coefficient of Variation	0.568		
Skewness	0.718		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.92	Shapiro Wilk Test Statistic	0.956
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	15.69	95% UTL with 90% Coverage	20.74
95% UPL (t)	**15.04**	**95% UPL (t)**	**18.87**
90% Percentile (z)	12.95	90% Percentile (z)	13.95
95% Percentile (z)	14.5	95% Percentile (z)	17.45
99% Percentile (z)	17.4	99% Percentile (z)	26.54
Gamma Distribution Test		Data Distribution Test	
k star	2.716	Data appear Normal at 5% Significance Level	
Theta Star	2.759		
nu star	108.6		
A-D Test Statistic	0.404	Nonparametric Statistics	
5% A-D Critical Value	0.747	90% Percentile	15.14
K-S Test Statistic	0.134	95% Percentile	16.93
5% K-S Critical Value	0.195	99% Percentile	17
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	17
90% Percentile	13.59	95% Percentile Bootstrap UTL with 90% Coverage	17
95% Percentile	**16.19**	95% BCA Bootstrap UTL with 90% Coverage	15.6
99% Percentile	21.85	95% UPL	16.93
		95% Chebyshev UPL	26.51
		Upper Threshold Limit Based upon IQR	20.65

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

Hg

General Statistics			
Total Number of Samples	18	Number of Unique Samples	16
Raw Statistics		Log-Transformed Statistics	
Minimum	0.0053	Minimum	-5.24
Maximum	**0.12**	Maximum	-2.12
Second Largest	0.1	Second Largest	-2.303
First Quartile	0.0198	First Quartile	-3.931
Median	0.051	Median	-2.979
Third Quartile	0.085	Third Quartile	-2.465
Mean	0.0527	Mean	-3.261
SD	0.0353	SD	0.934
Coefficient of Variation	0.67		
Skewness	0.305		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	0.122	95% UTL with 90% Coverage	0.242
95% UPL (t)	**0.116**	**95% UPL (t)**	**0.204**
90% Percentile (z)	0.0978	90% Percentile (z)	0.127
95% Percentile (z)	0.111	95% Percentile (z)	0.178
99% Percentile (z)	0.135	99% Percentile (z)	0.337
Gamma Distribution Test		Data Distribution Test	
k star	1.475	Data appear Normal at 5% Significance Level	
Theta Star	0.0357		
nu star	53.1		
A-D Test Statistic	0.357	Nonparametric Statistics	
5% A-D Critical Value	0.755	90% Percentile	0.102
K-S Test Statistic	0.132	95% Percentile	0.12
5% K-S Critical Value	0.207	99% Percentile	0.12
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	0.12
90% Percentile	0.11	95% Percentile Bootstrap UTL with 90% Coverage	0.12
95% Percentile	**0.138**	95% BCA Bootstrap UTL with 90% Coverage	0.12
99% Percentile	0.201	95% UPL	0.12
		95% Chebyshev UPL	0.211
		Upper Threshold Limit Based upon IQR	0.183

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3
General Background Statistics

Se

General Statistics			
Total Number of Samples	18	Number of Unique Samples	16
Raw Statistics		Log-Transformed Statistics	
Minimum	0.13	Minimum	-2.04
Maximum	**1.3**	Maximum	0.262
Second Largest	1.1	Second Largest	0.0953
First Quartile	0.36	First Quartile	-1.022
Median	0.49	Median	-0.714
Third Quartile	0.9	Third Quartile	-0.105
Mean	0.598	Mean	-0.686
SD	0.333	SD	0.646
Coefficient of Variation	0.557		
Skewness	0.547		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.897	Shapiro Wilk Critical Value	0.897
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	1.255	95% UTL with 90% Coverage	1.802
95% UPL (t)	**1.193**	**95% UPL (t)**	**1.597**
90% Percentile (z)	1.025	90% Percentile (z)	1.152
95% Percentile (z)	1.146	95% Percentile (z)	1.457
99% Percentile (z)	1.372	99% Percentile (z)	2.262
Gamma Distribution Test		Data Distribution Test	
k star	2.586	Data appear Normal at 5% Significance Level	
Theta Star	0.231		
nu star	93.1		
A-D Test Statistic	0.368	Nonparametric Statistics	
5% A-D Critical Value	0.746	90% Percentile	1.12
K-S Test Statistic	0.133	95% Percentile	1.3
5% K-S Critical Value	0.205	99% Percentile	1.3
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	1.3
90% Percentile	1.096	95% Percentile Bootstrap UTL with 90% Coverage	1.3
95% Percentile	**1.311**	95% BCA Bootstrap UTL with 90% Coverage	1.3
99% Percentile	1.779	95% UPL	1.3
		95% Chebyshev UPL	2.089
		Upper Threshold Limit Based upon IQR	1.71

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

Ag

General Statistics			
Total Number of Samples	14	Number of Unique Samples	13
Raw Statistics		Log-Transformed Statistics	
Minimum	0.02	Minimum	-3.912
Maximum	**1**	Maximum	0
Second Largest	1	Second Largest	0
First Quartile	0.0458	First Quartile	-3.1
Median	0.455	Median	-0.81
Third Quartile	0.863	Third Quartile	-0.148
Mean	0.461	Mean	-1.433
SD	0.378	SD	1.467
Coefficient of Variation	0.821		
Skewness	0.184		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Test Statistic	0.839
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	1.258	95% UTL with 90% Coverage	5.261
95% UPL (t)	**1.154**	95% UPL (t)	3.51
90% Percentile (z)	0.945	90% Percentile (z)	1.563
95% Percentile (z)	1.083	95% Percentile (z)	2.663
99% Percentile (z)	1.34	99% Percentile (z)	7.237
Gamma Distribution Test		Data Distribution Test	
k star	0.747	Data appear Normal at 5% Significance Level	
Theta Star	0.617		
nu star	20.91		
A-D Test Statistic	0.731	Nonparametric Statistics	
5% A-D Critical Value	0.765	90% Percentile	1
K-S Test Statistic	0.2	95% Percentile	1
5% K-S Critical Value	0.236	99% Percentile	1
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	1
90% Percentile	1.139	95% Percentile Bootstrap UTL with 90% Coverage	1
95% Percentile	**1.532**	95% BCA Bootstrap UTL with 90% Coverage	1
99% Percentile	2.465	95% UPL	1
		95% Chebyshev UPL	2.167
		Upper Threshold Limit Based upon IQR	2.088

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-3

General Background Statistics

Zn

General Statistics			
Total Number of Samples	14	Number of Unique Samples	14
Raw Statistics		Log-Transformed Statistics	
Minimum	10.1	Minimum	2.313
Maximum	**96**	Maximum	4.564
Second Largest	78.5	Second Largest	4.363
First Quartile	17.55	First Quartile	2.864
Median	28.2	Median	3.318
Third Quartile	56.13	Third Quartile	4.027
Mean	37.46	Mean	3.413
SD	25.97	SD	0.671
Coefficient of Variation	0.693		
Skewness	1.155		
Background Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.866	Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% UTL with 90% Coverage	92.24	95% UTL with 90% Coverage	124.9
95% UPL (t)	85.08	**95% UPL (t)**	**103.8**
90% Percentile (z)	70.75	90% Percentile (z)	71.7
95% Percentile (z)	80.19	95% Percentile (z)	91.48
99% Percentile (z)	97.89	99% Percentile (z)	144.5
Gamma Distribution Test		Data Distribution Test	
k star	2.036	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	18.4		
nu star	57.02		
A-D Test Statistic	0.409	Nonparametric Statistics	
5% A-D Critical Value	0.744	90% Percentile	87.25
K-S Test Statistic	0.202	95% Percentile	96
5% K-S Critical Value	0.231	99% Percentile	96
Data appear Gamma Distributed at 5% Significance Level			
Assuming Gamma Distribution		95% UTL with 90% Coverage	96
90% Percentile	72.55	95% Percentile Bootstrap UTL with 90% Coverage	96
95% Percentile	**88.36**	95% BCA Bootstrap UTL with 90% Coverage	96
99% Percentile	123.4	95% UPL	96
		95% Chebyshev UPL	154.7
		Upper Threshold Limit Based upon IQR	114

Note: UPL (or upper percentile for gamma distributed data) represents a preferred estimate of BTV

Table E-4
Two Sample Hypothesis Testing: Arsenic and Cadmium - ProUCL output

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: As-INV
Background Data: As-BKG

Raw Statistics

	Site	Background
Number of Valid Samples	87	18
Number of Distinct Samples	66	18
Minimum	1.675	1.71
Maximum	65	13.7
Mean	9.44	7.24
Median	7.3	6.605
SD	9.028	3.97
SE of Mean	0.968	0.936

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	4695
WMW Test U-Stat	867
WMW Critical Value (0.050)	1442
Approximate P-Value	0.239

Conclusion with Alpha = 0.05
Do Not Reject H0, Conclude Site <= Background

Non-parametric Quantile Hypothosis Test for Full Dataset (No NDs)

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Null Hypothesis	Site or AOC Concentration Less Than or Equal to Background Concentration (Form 1)
Alternative Hypothesis	Site or AOC Concentration Greater Than Background Concentration

Area of Concern Data: As-INV
Background Data: As-BKG

Raw Statistics

	Site	Background
Number of Valid Samples	87	18
Number of Distinct Samples	66	18
Minimum	1.675	1.71
Maximum	65	13.7
Mean	9.44	7.24
Median	7.3	6.605
SD	9.028	3.97
SE of Mean	0.968	0.936

Quantile Test

H0: Site Concentration <= Background Concentration (Form 1)

Approximate R Value (0.053)	13
Approximate K Value (0.053)	13
Number of Site Observations in 'R' Largest	11
Calculated Alpha	0.0733

Conclusion with Alpha = 0.053
Do Not Reject H0, Perform Wilcoxon-Mann-Whitney Ranked Sum Test

Table E-4
Two Sample Hypothesis Testing: Arsenic and Cadmium - ProUCL output

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Cd-INV
Background Data: Cd-BKG

Raw Statistics

	Site	Background
Number of Valid Samples	82	17
Number of Distinct Samples	53	17
Minimum	0.031	0.16
Maximum	2.5	0.52
Mean	0.372	0.329
Median	0.245	0.339
SD	0.438	0.102
SE of Mean	0.0484	0.0248

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	3968
WMW Test U-Stat	564.5
WMW Critical Value (0.050)	1278
Approximate P-Value	0.891

Conclusion with Alpha = 0.05
Do Not Reject H0, Conclude Site <= Background

Non-parametric Quantile Hypothesis Test for Full Dataset (No NDs)

User Selected Options	
From File	WorkSheet.wst
Full Precision	OFF
Confidence Coefficient	95%
Null Hypothesis	Site or AOC Concentration Less Than or Equal to Background Concentration (Form 1)
Alternative Hypothesis	Site or AOC Concentration Greater Than Background Concentration

Area of Concern Data: Cd-INV
Background Data: Cd-BKG

Raw Statistics

	Site	Background
Number of Valid Samples	82	17
Number of Distinct Samples	53	17
Minimum	0.031	0.16
Maximum	2.5	0.52
Mean	0.372	0.329
Median	0.245	0.339
SD	0.438	0.102
SE of Mean	0.0484	0.0248

Quantile Test

H0: Site Concentration <= Background Concentration (Form 1)

Approximate R Value (0.049)	16
Approximate K Value (0.049)	16
R Value Adjusted for Ties in Data	18
K Value Adjusted for Ties in Data	18
Number of Site Observations in 'R' Largest	16
Calculated Alpha	0.0369

Conclusion with Alpha = 0.049
Do Not Reject H0, Perform Wilcoxon-Mann-Whitney Ranked Sum Test